

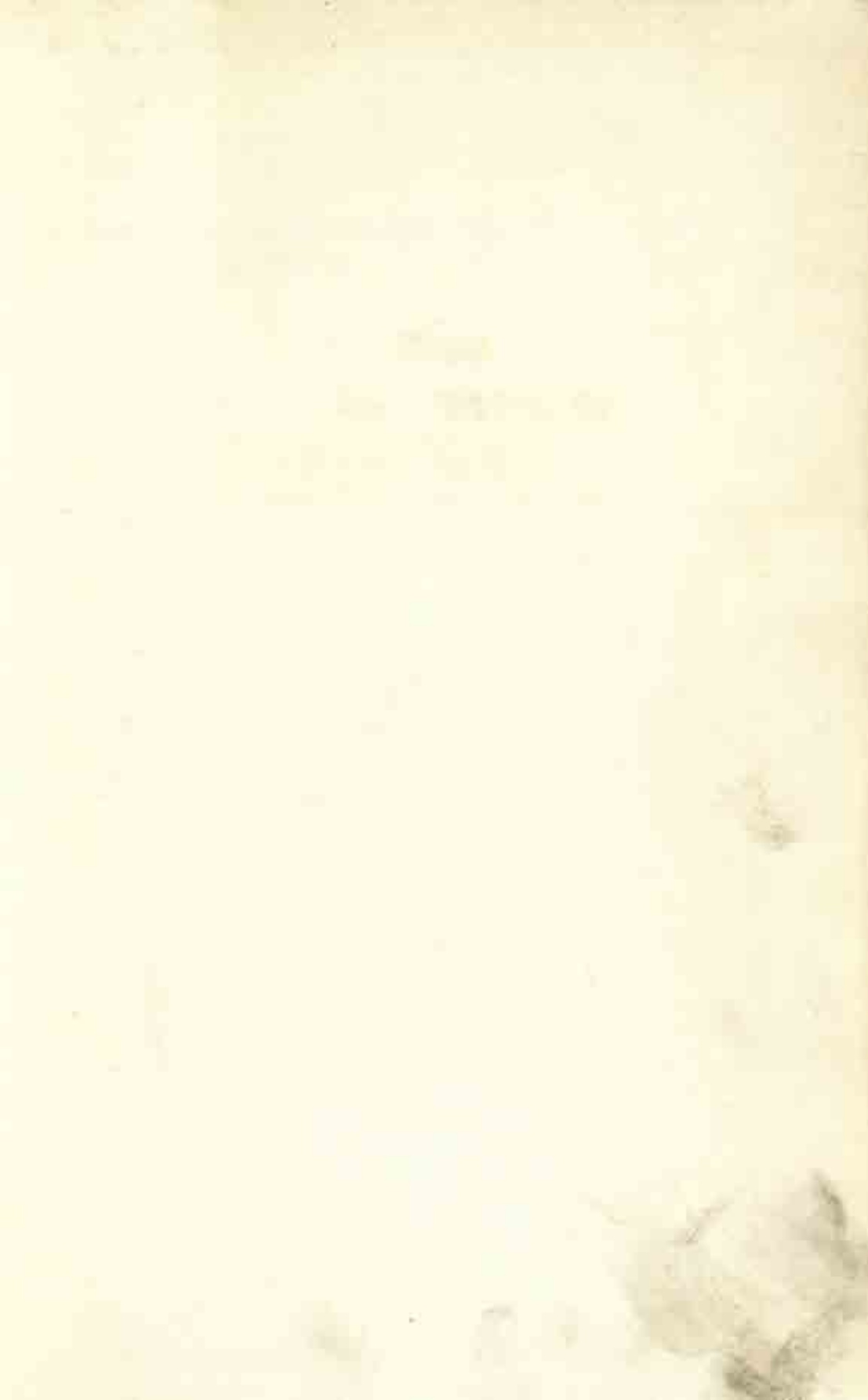
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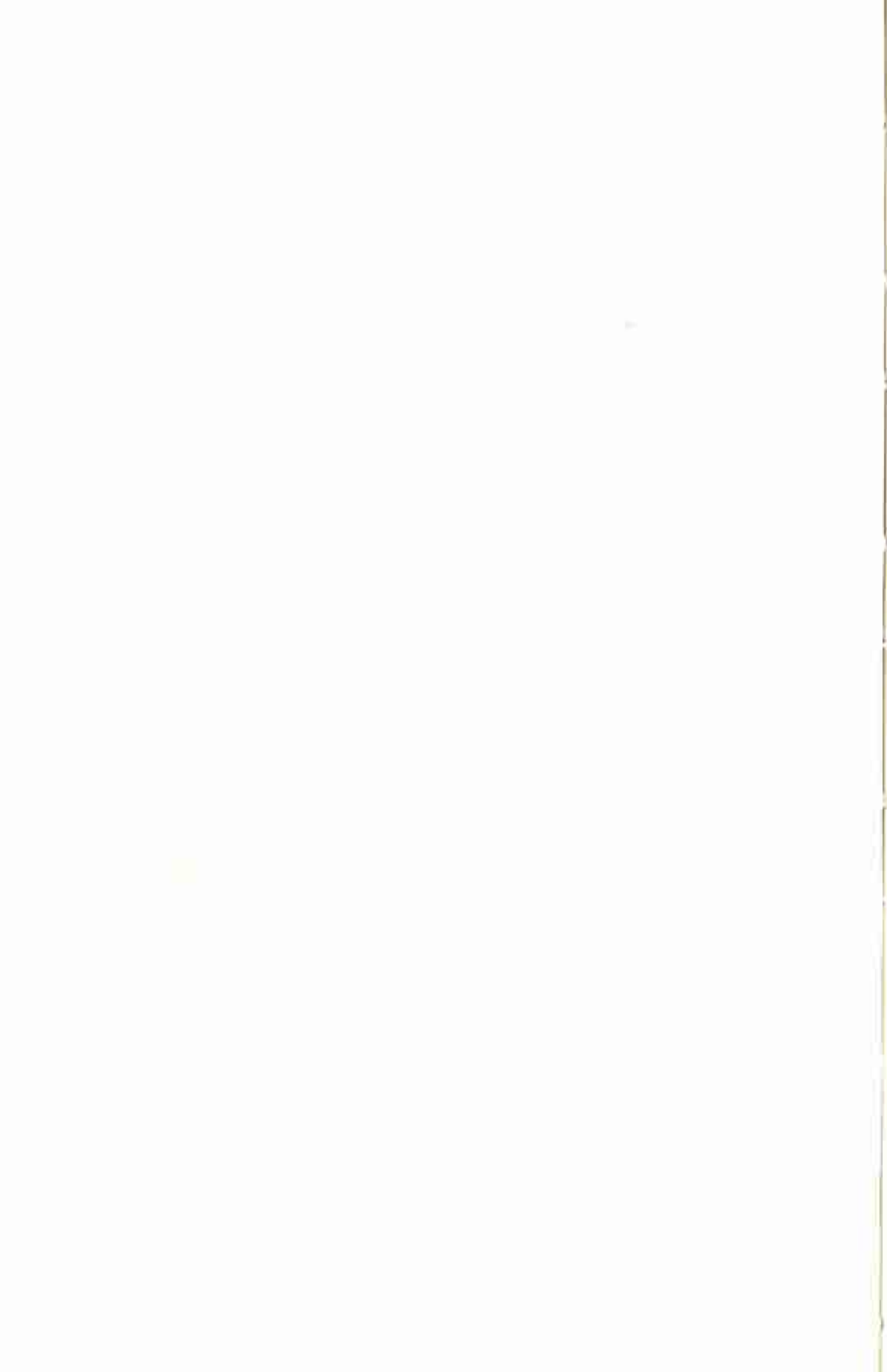
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THE PROBLEMS OF THE UNITY OR PLURALITY AND THE PROBABLE PLACE OF ORIGIN OF THE AMERICAN ABORIGINES¹

INTRODUCTORY REMARKS

BY J. WALTER FEWKES, PRESIDENT OF THE AMERICAN
ANTHROPOLOGICAL ASSOCIATION

OUR session this afternoon will be devoted to a consideration of the unity or plurality of the aboriginal American race and the probable place of its origin. It will practically take the form of a discussion, the various aspects of the subject being presented by those who have given it special attention. In opening this discussion I shall simply make a few suggestions and emphasize a few salient points, some of which others, better able than myself to present an authoritative treatment, may deem worthy of elaboration.

Far from being a novel one in the sessions of this Association, some aspect of the question of the origin of the American race has come to be almost perennial, and it acquires greater interest as increase in our knowledge of the subject offers new points of approach. At what epoch man came to our continent from a former home; how he made his way hither; and his history since he came, are questions that possess greater and greater attraction as the science of man becomes broader and deeper. While the majority

¹ Discussion at a joint session of the American Anthropological Association and Section H of the American Association for the Advancement of Science held at the U. S. National Museum, Washington, December 27, 1911.

of anthropologists hold that man's original home was in Eurasia, there are those who advance reasons which in their judgment are equally adequate to prove that he was autochthonous in America, whence he spread to the Old World. Some students have held that America was peopled from the Old World because conditions of life were more complex on that continent than in the New, and because the simians most closely allied anatomically to man are indigenous to the Eastern Hemisphere. As none of the higher apes occur in America, it is reasoned that man, who is regarded as related to these animals, could not have been evolved in America. If we accept the theory that man originated in the Old World, it is evident that his colonization of America is a question of mode of migration, which resolves itself into a geographical or a geological one. An adequate solution of our problem must draw contributions from several sciences—geology, geography, comparative anatomy, and culture history. The distribution of animal or food plants, the direction of ocean currents and winds, the changes in continental masses—all must be considered.

Necessarily the subject of our proposed discussion centers about that of the antiquity of man in America. When did man come to this continent? Was it in a late geological epoch, making him contemporaneous with animals now extinct like the giant sloths, mammoths, and mastodons; or was it later? It can readily be seen that the question becomes a paleontological one, and so far as the determination of the age of the strata in which the anthropologist finds human remains is concerned, a purely geological problem. Unless we are prepared to accept an autochthonous origin of man or his evolution from higher animals in America, the means of primitive migration available, and the conditions of culture implied by a sea voyage, must not be overlooked. It is evident that the situation of islands, the configuration of land, and changes in its contour, are directly connected with all theories of the peopling of America. Both the course and velocity of ocean currents, and the distribution and quantity of food supplies and fresh water, must be considered in this problem, which draws from so many sources for its solution.

It is important, in this discussion, to consider the physical and cultural condition of the first men that landed in America. Were they low in the scale, scarcely raised above their nearest animal relatives, or did they bring with them well-developed arts? For an answer to these questions, so far as ancestry is concerned, we must consult the physical anthropologist and the archeologist. Whence arose all this great complexity of tongues, rivaling in number those of Babel? Are the present linguistic stocks due to consolidation of a still greater number, or were they derived from one ancestral form? Are there any essential lexical or grammatical relationships between the languages of the Old World and the New, and if so, what do their resemblances mean? The philologist may shed light on these questions. The observer finds evidences of many arts, symbols, ceremonies, and mythologies, comparable or identical with those of the Old World, which existed in prehistoric America. For the interpretation of these similarities we naturally turn to the ethnologist. They have been interpreted by some students as derivative, by others as due to independent origin. It is self-evident that they have a significant bearing on the subject we are to discuss.

At one time the Indians of our continent were regarded as rude savages, but the discovery of magnificent temples in Mexico and Central America, and the evidences of high culture, with advanced sociological conditions, in the lofty plateaus of South America, show that in dealing with the American race we are considering a people that in some places reached a high stage of development. The geographical limitations of the higher culture of aboriginal man in America also have a bearing on our discussion. A determination of the unity or plurality of type in the American race would appear to be fundamental, and one upon which rests the whole fabric of physical and cultural variation in different parts of the American continent. Many physical anthropologists have held that throughout the length of our continent, through all degrees of climate, from the frigid to the torrid zone, the American race is practically of one type. It is supposed that the ancestors of this race must have lived for ages in one environment which stamped upon it a common feature that could not be

eradicated by such great climatic differences. Where that ancestral home was, has not yet been made known, and if it could be determined an important step would be taken in the solution of our problem.

In their ultimate analysis ethnology and archeology are departments of history in its broadest significance; they belong to culture history, not recorded in writings, although traced by other equally decisive evidence. The discovery of America by Columbus was one of the most important and far-reaching events in human history, but it was not the original discovery of the American continent. Centuries before the great Genoese, man had developed a characteristic culture upon its soil. Most of the evidence for the antecedent discovery of America is archeological, and we designate the epoch prehistoric, but all this belongs to the evolution of culture and may therefore be called culture history. The discussion of the archeological evidence of the discovery of America by man prior to Columbus is facilitated by determining to which of the races of the Old World he is most closely allied.

The laws governing the dispersion of animals and plants may well be considered in the discussion of the peopling of the American continent. So far as man is regarded as an animal he is subservient, especially in his primitive condition, to the same laws of geographical dispersion that are so potent in the distribution of faunas and floras. But in all considerations of more cultivated man, his place of origin and dispersion over the earth's surface, the psychic element should not be overlooked, for while he shares with animals certain mental characters, his migration on the earth is due primarily to the greater development of his mind. In some physical features he may be called weak and helpless in a struggle for supremacy, but no animal equals him in relative cranial capacity, and he outranks all in mental power. His mind, not his body, has conquered the world, and the use of that mind makes it possible for him to adapt himself to all climates and environments. The development of ideas, or culture history and its modifications by surroundings, is closely allied to our subject.

HISTORICAL NOTES

BY ALEŠ HRDLIČKA

The program calls first for a presentation of the historical side of the subject, or, strictly speaking, for a brief history of the opinions that have been held on the question of the nature and origin of the American natives since their discovery. This history, it may be said at the outset, is largely one of speculation, fettered on one side by ignorance and on the other by ancient traditions.

When Columbus discovered the New World he and his companions imagined, as is well known, that they had reached India, and the people met were naturally taken for natives of India. Later, as the true nature of the new land became better known, speculations concerning the newly discovered race took other directions, and some of the notions developed proved disastrous to the Indians. History tells us that many of the early Spaniards, up to Las Casas' time, reached the conclusion that, as no mention was made concerning the American people in Hebrew traditions, they could not strictly be regarded as men, equivalent to those named in biblical accounts, and this view, which eventually had to be counteracted by a special papal bull, led directly or indirectly to wholesale enslavement and destruction of the Americans.

One of the effects of this papal edict was that thenceforth the origin of the Indians was sought in other parts of the world, and the seeming necessity of harmonizing this origin with biblical knowledge led eventually to several curious opinions. One of these, held by Gomara, Lerius, and Lescarbot, was to the effect that the American aborigines were the descendants of the Canaanites who were expelled from their original abode by Joshua; another, held especially by McIntosh,¹ was that they were descended from Asiatics who themselves originated from Magog, the second son of Japhet; but the most widespread theory, and one with the remnants of which we meet to this day, was that the American Indians represented the so-called Lost Tribes of Israel.²

During the course of the 19th century, with LeVèque, Hum-

¹ McIntosh, J., *Origin of the North American Indians*, New York, 1843.

² Adair, J., *History of the North American Indians*, London, 1775.

boldt,¹ McCulloch,² Morton,³ and especially Quatrefages,⁴ we begin to encounter more rational hypotheses concerning the Indians, although by no means a single opinion. Lord Kaimes, Morton, and Nott and Gliddon⁵ professed the belief that the American natives originated in the New World and hence were truly autochthonous; Grotius believed that Yucatan had been peopled by early Christian Ethiopians; according to Mitchell the ancestors of the Indians came to this country partly from the Pacific ocean and partly from northeastern Asia; the erudite Dr McCulloch believed that the Indians originated from parts of different peoples who reached America over lost land from the west "when the surface of the earth allowed a free transit for quadrupeds"; Quatrefages viewed the Americans as a conglomerate people, resulting from the fossil race of Lagoa Santa, the race of Paraná, and probably others, in addition to which he believed there had been settlements of Polynesians; and according to Pickering the Indians originated partly from the Mongolian and partly from the Malay.

The majority of the authors of the last century, however, including Humboldt, Brerewood, Bell, Swinton, Jefferson, Latham, Quatrefages, and Peschel,⁶ inclined to the belief that all the American natives, excepting the Eskimo, were of one and the same race and that they were the descendants of immigrants from northeastern Asia, particularly from the "Tartars" or Mongolians.

The most recent writers, with one marked exception, agree entirely that this country was peopled through immigration and local multiplication of people; but the locality, nature, and time of the immigration are still much mooted questions. Some authors incline to the exclusively northeastern Asiatic origin; others, such as ten Kate and Rivet, show a tendency to follow Quatrefages in

¹ Humboldt, *Political Essay*, I, 115; Humboldt and Bonpland, *Voyage, Vne des Cordilleras*, Paris, 1810.

² McCulloch, *Researches, Philosophical and Antiquarian, Concerning the Aboriginal History of America*, Baltimore, 1829.

³ Morton, S. G., *Distinctive Characteristics of the Aboriginal Race of America*, 2d ed., pp. 35-36. Philadelphia, 1844. (Also his *Crania Americana*, and *Origin of the Human Species*.)

⁴ Quatrefages, *Histoire générale des races humaines*, Paris, 1887.

⁵ Nott and Gliddon, *Types of Mankind, and Indigenous Races*. (The latter includes statements by Ledy and Morton.)

⁶ Peschel, O., *The Races of Man*, p. 418, 1876.

attributing at least some parts of the native American population to the Polynesians; Brinton¹ held that they came in ancient times over a land connection from Europe; and Kollmann,² basing his belief on some small crania, believes that a dwarf race preceded the Indian in America.

A remarkable hypothesis concerning the origin of the American native population, deserving a few words apart, has within the last thirty years, and especially since the beginning of this century, been built up by Ameghino,³ the South American paleontologist. This hypothesis is, in brief, that man, not merely the American race, but mankind, originated in South America; that man became differentiated in the southern continent into a number of species, most of which are now extinct; that from South America he migrated over ancient land connections to Africa, and from there peopled all the Old World; that a strain from the remaining portion multiplied and spread over South America; and that eventually, somewhere in relatively recent times, a portion of that branch which peopled Africa and then Asia, migrated, by the northern route, into North America. In part this theory is also favored by Sergi.

In addition there have been some suggestions that the Americans may have arrived from the "lost Atlantis"; and the theory has even been expressed that man, instead of migrating from north-eastern Asia into America, may have moved in the opposite direction, and especially that, after peopling this continent, a part of the Americans reached Siberia.⁴

The Eskimo have been generally considered as apart from the

¹ Brinton, D. G., *The American Race*, New York, 1891.

² Kollmann, J., *Die Pygmäen* (Verh. d. Naturforsch. Ges. Basel, xvi, Basel, 1902).

³ Ameghino, F., *El Tetraprothomo Argentinus* (Anal. Mus. Nac., xvi, Buenos Aires, 1907); also *Le Diprothomo platensis* (ibid., xix, 1909).

⁴ In this connection see also Campbell, J., Asiatic Tribes in N. America, *Proc. Canadian Inst.*, n. s., i, Toronto, 1881; Mason, O. T., Migration and the Food Quest: A Study in the Peopling of America, *Smithson. Rep. for 1894*, Wash., 1896, pp. 323-540; Morse, E. S., Was Middle America Peopled from Asia? *Popular Sci. Mo.*, Nov., 1898; Powell, J. W., Whence Came the American Indians? *Forum*, Feb., 1898; *Major Powell's Inquiry: Whence Came the American Indians? An Answer*, by J. Wickersham, Tacoma, Wash., 1899, pp. 1-28; Hallock, Chas., The Ancestors of the American Indians, *Amer. Antiquarian*, xxiv, no. 1, 1902, and the publications of the Jesup Expedition of the American Museum of Natural History, New York.

Indian, some holding that they preceded and others that they followed him. They have been connected generally with the north-eastern Asiatics, but there are also those who see a close original relation between the Eskimo and the Lapps, and even between the Eskimo and the paleolithic Europeans.

These are, in brief, the various more or less speculative opinions that so far have been advanced in an effort to explain the ethnic identity and the place of origin of the American Indian; and it is only logical that the next word on these problems be given to physical anthropology, which deals with what are, on the whole, the least mutable parts of man, namely, his body and skeleton.

THE BEARING OF PHYSICAL ANTHROPOLOGY ON THE PROBLEMS UNDER
CONSIDERATION

BY ALEŠ HRDLÍČKA

The somatology of the Indians, which barely saw its beginnings in the time of Humboldt and Morton, has now advanced to such a degree that at least some important generalizations concerning the American aborigines are possible. We have now at our disposal for comparison, in American museums alone, upward of twenty thousand Indian crania and skeletons from all parts of the continent, while several thousand similar specimens are contained in European collections. A considerable advance, particularly in North America, has also been made in studying the living natives. Unfortunately we are much less advantageously situated in regard to comparative skeletal material as well as with respect to data on the living from other parts of the world, particularly from those parts where other indications lead us to look for the origin of the Indian.

What can be stated in the light of present knowledge concerning the American native with a fair degree of positiveness is that, first, there is no acceptable evidence, or any probability, that man originated on this continent; second, that man did not reach America until after attaining a development superior to that of even the latest Pleistocene man in Europe, and after having undergone advanced and thorough stem and even racial and tribal differentiation; and third, that while man, since the peopling of

this continent was commenced, has developed numerous secondary, subracial, localized structural modifications, these modifications can not yet be regarded as fixed, and in no important feature have they obliterated the old type or types of the people.

We are further in a position to state that, notwithstanding the various secondary physical modifications referred to, the American natives, barring the more distantly related Eskimo, present throughout the Western Hemisphere numerous important features in common, which mark them plainly as parts of one stem of humanity. These features are:

1. The color of the skin. The color of the Indian differs, according to localities, from dusky yellowish-white to that of solid chocolate, but the prevailing color is brown.

2. The hair of the Indian, as a rule, is black and straight; the beard is scanty, especially on the sides of the face, and it is never long. There is no hair on the body except in the axillæ and on the pubis, and even there it is sparse.

3. The Indian is generally free from characteristic odor. His heart-beat is slow. His mental characteristics are much alike. The size of the head and of the brain cavity is comparable throughout, averaging somewhat less than that of white men and women of similar stature.

4. The eyes as a rule are more or less dark brown in color, with dirty yellowish conjunctiva, and the eye-slits show a prevailing tendency, more or less noticeable in different tribes, to a slight upward slant, that is, the external canthi are frequently more or less higher than the internal.

5. The nasal bridge, at least in men, is throughout well developed, and the nose in the living, as well as the nasal aperture in the skull (barring individual and a few localized exceptions), show medium or mesorhinic relative proportions. The malar regions are as a rule rather large or prominent.

6. The mouth is generally fairly large, the lips average from medium to slightly fuller than in whites, and the lower facial region shows throughout a medium degree of prognathism, standing, like the relative proportions of the nose, about midway between those

found in whites and negroes. The chin is well developed. The teeth are of medium size, when compared with those of mankind in general, but perceptibly larger when contrasted with those of the white American; and the upper incisors are characteristically shovel-shaped, that is, deeply and peculiarly concave on the buccal side. The ears are large.

7. The neck, as a rule, is of only moderate length, and is never very thin; the chest is somewhat deeper than in average whites: the breasts of the women are of medium size and generally more or less conical in form. There is a complete absence of *steatopygia*; the lower limbs are less shapely and especially less full than in whites; the calf is small.

8. The hands and feet, as a rule, are of relatively moderate or even of small dimensions, and what is among the most important of all the characteristics, the relative proportions of the forearms to arms and those of the distal parts of the lower limbs to the proximal (or, in the skeleton, the radio-humeral and tibio-femoral indices), are in general, throughout the two parts of the continent, of much the same average value, which differs from that of both the whites and the negroes, standing again in an intermediary position.

This list of characteristics which are, generally speaking, shared by all American natives, could readily be extended, but the common features mentioned ought to be sufficient to make clear the fundamental unity of the Indians.

The question that necessarily follows is, "Which, among the different peoples of the globe, does the Indian, as here characterized, most resemble?" The answer, notwithstanding our imperfect knowledge, can be given conclusively. There is a great stem of humanity which embraces people ranging from yellowish white to dark brown in color, with straight black hair, scanty beard, hairless body, brown and often more or less slanting eye, mesorhine nose, medium prognathism, and in every other essential feature much like the American native; and this stem, embracing several races or types and many nationalities and tribes, occupies the eastern half of the Asiatic continent and a large part of Polynesia.

From the physical anthropologist's point of view everything

indicates that the origin of the American Indian is to be sought among the yellowish-brown peoples mentioned. There are no two large branches of humanity on the globe that show closer fundamental physical relations.

But difficulties arise when we endeavor to assign the origin of the Indian to some particular branch of the yellowish-brown population. We find that he stands quite as closely related to some of the Malaysian peoples as to the Tibetans, the Upper Yenisei natives, and some of the northeastern Asiatics. It is doubtless this fact that accounts for some of the hypotheses concerning the origin of the Indian that attribute his derivation partly to the "Tartars" and partly to the Polynesians.

All that may be said on this occasion is that the circumstances point strongly to a coming, not strictly a migration, over land, ice, water, or by all these media combined, from northeastern Asia, of relatively small parties, and to comings repeated probably nearly to the beginning of the historic period.

As to Polynesian migrations within the Pacific, such were, so far as can be determined, all relatively recent, having taken place when America doubtless had already a large population and had developed several native cultures. It is, however, probable that after spreading over the islands, small parties of Polynesians may have accidentally reached America; if so, they may have modified in some respects the native culture, but physically, being radically like the people who received them (barring their probably more recent negro mixture), they would readily blend with the Indian and their progeny could not be distinguished.

The conclusions, therefore, are that the American natives represent in the main a single stem or strain of people, one *homotype*; that this stem is the same as that of the yellow-brown races of Asia and Polynesia; and that the main immigration of the Americans has taken place gradually by the northwestern route, in the Holocene period, and after man had reached a relatively high stage of development and multiple racial differentiation. The immigration, in all probability, was a dribbling and prolonged overflow, likely due to pressure from behind and a search for better hunting and

fishing grounds. This was followed by rapid multiplication, spread, and numerous minor differentiations of the people on the new, vast, and environmentally highly varied continent. It is also probable that the western coast of America, within the last two thousand years, was on more than one occasion reached by small parties of Polynesians, and that the eastern coast was similarly reached by small groups of whites; but these accretions have not modified greatly, if at all, the mass of the native population.

ON THE GEOLOGICAL ASPECTS OF THE POSSIBLE HUMAN IMMIGRATION
BETWEEN ASIA AND AMERICA

BY WILLIAM H. DALL

The assumption is generally made that migration by prehistoric man between the continents of Asia and America was predominantly (if not exclusively) by way of the northeastern extreme of the one and the northwestern extreme of the other body of land.

This idea being taken as a starting point for consideration of the question that has been assigned to me in this discussion, it devolves upon us to consider the local conditions under which migration might have taken place.

To the eye of one unfamiliar with the Bering sea region, and judging solely by the appearance of ordinary maps, it would appear obvious that the long chain of the Aleutian islands together with the Alaska peninsula forms a most convenient series of stepping stones from Kamchatka to America, which, given a certain amount of elevation above its present level, might almost form a complete land bridge between the two continents. Such assumptions have frequently been made in discussing the peopling of America in prehistoric times.

How unfounded are these ideas will presently be shown.

Bering sea, taken in a broad sense, may be divided into two characteristic areas, by a line obliquely drawn from the southeastern extreme of the Chukchi peninsula to the Alaska peninsula, curving sufficiently to the southwest to include all the islands situated in the midst of the sea, St Lawrence, St Mathew, the Pribilof islands, and their associated islets.

To the northeast of this line the sea is shallow, averaging less than fifty fathoms, and over a large part of the area less than thirty fathoms. To the southwest of the line the continental shelf falls abruptly to oceanic depths of 1000 to 2000 fathoms or little less. While the mud brought down by the Yukon, Kuskokwim, and other large American rivers undoubtedly contributes somewhat to the shoaling of Bering sea, especially near the deltas, the great submarine plateau is not an accumulation of mud, but a submerged portion of the continent, composed, at least to some extent, of Miocene and Pliocene fossiliferous rocks, masses of which, containing fossils, have been brought up, entangled in the eruptive rocks, of which the islands previously mentioned are formed. This is notably the case on the island of St Paul,¹ and the same rocks with the same fossils come to the surface in the vicinity of Nushagak on the continent to the eastward.

The deep water of the western and southern portion of Bering sea extends northward to the Chukchi peninsula on the Asiatic side of Bering strait, heading in the deep bight known as Plover bay; and on the south extends, roughly parallel with the Kurile islands, to northern Japan.

The sea on either side of the Aleutian chain, and frequently between the groups into which the chain is divided, is extremely deep, 800 fathoms or more being had in some places within a mile or two of the shore, and 1000 to 2000 fathoms within a relatively short distance farther seaward.

These islands mark a line of weakness in the earth's crust, from which have emerged granitic and porphyritic eruptive rocks, against which have been deposited Eocene, Oligocene, and Miocene sedimentary strata, subsequently invaded by basaltic eruptives, which are still occasionally thrust forth.

Between the westernmost islands of the Aleutian chain and the continent of Asia lies a stretch of sea some 350 miles in width, and now one of the foggiest, roughest, and most continuously tempestuous seas in the world. Through this stretch pours the Arctic

¹ A list of these fossils is given in the *U. S. Report on the Fur Seals and Fur Seal Islands of the North Pacific Ocean*, part III, 1899, pp. 544-545.

current in a southwesterly direction with a rate of nearly a mile an hour to the southward in quiet weather. It is true that the Commander islands lie a little to the northward in this gap, but no relics of habitation by man previous to Bering's voyage have been found on them, and the discovery of the sea-cow there, which had previously been exterminated for use as food wherever man is known to have been, is good evidence that primitive man had never invaded the last refuge of that now extinct species.

We must suppose that man on first arriving in America was in a low stage of culture, and, while perhaps possessed of rude canoes, would not have had means of navigating a stormy sea, 350 miles wide, without compass, starguides,¹ or landmark, and across a current that would have swept him far to the southward of the Aleutians before he could possibly have reached in canoes the most westerly members of the group.

My conclusion is that migration from Asia to America by the Aleutian chain was absolutely impossible to primitive man, and that this route must be discarded entirely from our hypotheses.

I may add here that the legends, geographical names, and language, as well as the typically Eskimo culture, of the Aleuts, all point to their invasion of the Archipelago from the eastward, as the result of tribal wars, and before they had developed their specialized culture to the point it finally attained.²

The next region to be considered is that about Bering strait.

Here we have shallow water, not exceeding 200 feet in depth anywhere between the continents at the strait, and to reach a point where the sea is seventy-five fathoms deep one must go several hundred miles northward.

The so-called Seward or Kaviak peninsula reaches out toward Asia from the American continental mass, and only about fifty miles away, on the Asiatic eastern extreme rises East Cape to a commanding height. Midway of the strait are the small but inhabited islands called the Diomedes.

¹ The stars are not visible in this latitude except in winter, and if visible would be concealed by the perpetual fog.

² See: Dall, *Origin of the Innuit*, *Contr. to N. Am. Ethnology*, vol. 1, pp. 93-98, 1877; *Remains of Later Prehistoric Man, etc.*, *Smithsonian Contr. to Knowledge*, no. 318, 1878.

The geology of the American peninsula differs curiously from that of the Chukchi peninsula on the opposite side of the strait. It comprises a complex of rocks, schistose and slaty to a large extent, from which the gold placers have been derived.

It is margined by elevated beaches of Pliocene and Pleistocene age, in which the first discovery of gold was made, and which indicate a gradual rise of the land from Pliocene to the recent Quaternary time. At no time when we might suppose primitive man to have invaded America is there evidence that the land of the peninsula and the region of the strait were higher than at present. On the contrary, in the Pliocene at least we have unmistakable evidence that not only was the land lower and the climate somewhat milder (approximating that of the Aleutian region of today) but that the communication between the North Atlantic and North Pacific waters was more open than today. As evidence of this I may cite the fact that, while the type of *Littorina* of which *L. obtusata* L. and *L. palliata* Say are characteristic is not now known from anywhere west of the Atlantic coast of America, a fine species of this sort is found in the Pliocene of Nome, Alaska; and in the Pliocene of Sankoty Head, Nantucket, Mass., are two species of bivalves no longer living in the Atlantic, but found both fossil in the Nome Pliocene and living in the waters of Bering sea.

With the coming of the Glacial epoch a lowering of temperature took place in this region which has, with various fluctuations, continued practically to the present time, attended, after the melting of the glaciers, by a gradual and very moderate elevation of the land which is believed to be still in progress. Very recent indications of it have been observed in the vicinity of St Michael on Norton sound.

On the opposite side of Bering strait the geological character is quite different. The Diomedé islands in the strait are granitic domes of massive eruption. The high land of the Chukchi peninsula is largely of the same character, the rock forms having been modified to some extent by small local glaciers and the disintegrating influence of very low winter temperatures. There is no trace of the gold-bearing series of schistose rocks to which the metallic riches of

Alaska are due, the utmost endeavors of Russian and American explorers and prospectors having revealed no indications of gold in commercial quantities. It is only some hundred and thirty miles westward from Bering strait that sedimentary rocks are reported. Moreover, it is well known that the vast boreal tundras of the North Siberian coast have but recently (in a geological sense) emerged from the sea; the bones of whales now existing on the surface in places many miles from the coast of the Polar sea.

It is an historical fact that the present group of Asiatic Eskimo (not the Chukchi) are migrants from America, driven by tribal wars not many centuries ago, and that at one time their colonies extended much farther west and south than at the present time.¹

For the discontinuity of the land at Bering strait (the region to the north of the strait being excluded from the discussion) during and after the Glacial epoch, there is evidence of a certain weight in the distribution of the fauna. In the matter of the mollusca, if the land had been continuous then we should expect to find the same marine fauna on both sides of the strait now.

Excluding species belonging to the circumpolar fauna, strictly speaking, and which largely date back to the Miocene; and the few forms that have crept from the South Pacific abyssal waters north to Bering sea and its cold shallows, we find the unexpected fact that the fauna of the Asiatic coast and that of the American coast

(For the historical data and other information about the Innuits of Asia and the Diomedes, see the following sources:

Gerhard Friedrich Müller, *Voyages from Asia to America*; translated by Thos. Jeffreys; second ed., 1764, pp. 25-27.

W. H. Dall, *Alaska and Its Resources*, Boston, Lee and Shepard, 1870, pp. 375-6.

———, *Contributions to N. Am. Ethnology* (Powell Survey), 1, 1877, pp. 13-14, 93-106.

———, *Remains of Later Prehistoric Man, etc.*, *Smithsonian Contr. to Knowledge*, no. 318, 1878.

———, *Proc. Royal Geographical Society*, III, no. 9, Sept., 1881, pp. 568-70.

———, *Chukchee and Namulla People*, *American Naturalist*, Nov., 1881, pp. 857-868.

———, *U. S. Coast and Geodetic Survey, Annual Rep. for 1890*, app. 19, p. 759, note, 1891.

For data on the physical conditions at Bering strait see:

W. H. Dall, *Notes on Alaska and the vicinity of Bering Strait*, *Am. Journ. Sci.*, XXI, Feb. 1881, pp. 104-111; and map.

are sharply differentiated, and that Bering strait, or perhaps I should say the deep submarine valley entering Plover bay just west of the strait, separates two markedly distinct faunas.

If we take the Quaternary vertebrata, the woolly rhinoceros on the Asiatic side, with the musk ox and the mazama (Rocky mountain goat) on the American side, have left their bones scattered on the surface close to the strait, but neither has been found on the opposite side. The existing mountain sheep (*Ovis nivalis*) of the mountains west of the strait and that of the Seward peninsula east of the strait (*O. dalli*) are very distinct species. Even the harlequin seal (*Histiophoca*), common within a few miles of the strait in Asia, is not known from America.

Birds like the spoonbilled sandpiper and the Siberian bulfinch are known from America only by a single straggler in each case, while the former at least is far from rare in Plover bay. Scores of American birds will occur to the ornithologist as abundant in western Alaska yet unknown from eastern Siberia. If the land had been continuous in the Quaternary would not many of them have extended their range to both continents and continued their visits, by inherited tendency, during present conditions?

Too much weight must not be laid on these facts, yet it cannot be denied that they have some significance.

I was told by the natives that, though the ice in the strait is rarely at a standstill in winter, American caribou even now occasionally cross, only to meet their fate at the hands of the native hunters. Foxes, Arctic hare, and the polar bear roam freely over the ice; and are occasionally seen on bits of floe when ice breaks up in the spring. If the ice were stationary in the strait, as may well have been the case at times in the past (since the heavy floe occasionally very nearly touches bottom there at the present day) it may well have afforded a road to primitive man not less hardy than the animals upon which he subsisted.

It is therefore eminently probable that the migration from Asia took place when the culture of the invaders was sufficiently advanced for them to be able to cross the strait in canoes; or, like the present Eskimo, they may have during glaciation followed the

marine mammals, the walrus and the seal, along the edges of immovable floe ice closing the strait perhaps for some centuries.

One other hypothesis remains. The elevation of the Seward peninsula may be correlated with a sinking of the seabottom in the region of shallow water north of Bering strait.

Whaling vessels cruising in the vicinity of Wrangell island in open seasons report to me the existence of bright green spots of vegetation on its shores, such as are, a little farther south, the invariable sign of the existence of a prehistoric kitchen-midden; also the Point Barrow people have myths and legends of a people clad entirely in skins of the polar bear who live somewhere in the unexplored part of the Polar sea to the northwest. These people are very real to them; even a few years ago, Capt. Herendeen was called out of his hut during the arctic night, because a party of these Polar people had, it was alleged, been seen by some of the Point Barrow people far out on the floe to the northwest of the Point, traveling with hand sledges. Men who disappear when hunting seal on the edge of the floe in winter are sometimes believed to have either joined some party of the Polarites or to have been killed by them. Whatever weight, if any, we may place upon such ancient beliefs, and whatever measure of probability we may allot to the hypothesis of former land-bridges to the north of Bering strait, the fact remains that there is as yet nothing pointing to the likelihood of any more substantial connection of the two continents than exists at the present time, at least during the period when primitive man may have invaded America.

PALEONTOLOGICAL EVIDENCE BEARING ON THE PROBLEM OF THE ORIGIN
OF THE AMERICAN ABORIGINES

BY JAMES W. GIDLEY

That man did not make his appearance in America until long after he was known to have existed in Europe and Asia is generally conceded by vertebrate paleontologists. Up to the present time the earliest authentic geological records of the existence of prehistoric man in America have been found only in beds of comparatively recent date, the formations containing such evidence being

certainly of later date than the middle Pleistocene, and probably not older than the post-glacial epoch.

In contrast with the careful and systematic way in which the Pleistocene mammals of Europe have been studied, our knowledge of the fauna of that age in North America is at present very unsatisfactory, and many of our theories and speculations concerning it are based on insufficient and incomplete data, which are much in need of a thorough revision. However, regarding the more conspicuous mammals at least, their general character, order of appearance, and probable origin have been fairly well worked out, and may throw some light on the probable time of appearance and place of origin of the American aborigines.

At the beginning of the Pleistocene, European mammals of modern type first began to make their appearance in North America. These and subsequent arrivals of Old World forms, together with the species indigenous to the country, and with the great edentates and other South American forms which had made their way into North America by way of the Isthmus of Panama, united to form on this continent, in mid-Pleistocene time, a vast assemblage of most varied forms of mammal life. Included in this fauna were many species of true horses, camels, llamas, tapirs, great ground sloths and armored glyptodonts, many varieties of bisons and other bovines, the prong-horn (*Antilocapra*), peccaries (*Platygonus*), the great beaver-like rodents (*Castoroides*), at least two species of elephants (*Elephas imperator* and *E. columbi*), the American mastodon, great saber-toothed tigers, bears (*Arctotherium*), and amphicyonine dogs.

During the later glacial and interglacial epochs there was a gradual extinction or dispersion of nearly all of these older types, while the invasion of North America by European and Asiatic types continued. Among these later arrivals probably came many of the mammals found inhabiting this country at the time of its first exploration by historic man. Thus the later phases of the Pleistocene witnessed the first appearance in North America of such modern mammals as the musk-ox (*Ovibos*), the moose (*Alces*), the modern bison (*Bison bison*), the elk or wapiti (*Cervus*), the

caribou (*Rangifer*), the mountain sheep (*Ovis*), the mountain goat (*Oreamnos*), and the modern bears (*Ursus*). The northern mammoth (*Elephas primigenius*) seems also to have crossed into America about this time. It was probably with this later fauna that prehistoric man found his way across the land bridge from the Old World and established himself in America.

That there was a land connection between North America and the Old World at the beginning of the Pleistocene, there can be no doubt, and that it existed again as late as the close of the last glacial and probably well into the post-glacial epoch, is also reasonably certain. But as to the location of this land bridge—whether it connected North America with Europe by way of Greenland, or with Asia by way of Alaska, is not so definitely indicated by the fossil mammalian evidence. The question as to whether there ever had been a land connection between Europe and Greenland, or even that one existed during the early Pleistocene, does not enter here, as the problem before us concerns only the land connection that existed at the time man first appeared in America and over which he must have passed to reach this continent.

The character and distribution of the Pleistocene and recent faunas that found their way to America from the Old World point very definitely to an Alaska-Siberian land bridge as being by far the more probable route. The finding of the remains of the northern mammoth (*Elephas primigenius*) in such abundance along the Siberian coast, and distributed over Alaska and southward along the terminal border of the retreating ice sheet, as well as the presence of numerous remains of the horse, bison, musk-ox, caribou, moose, wolf, beaver, etc., found in the Pleistocene deposits of Alaska, very materially supports this theory. Good evidence is also furnished in the fact that, of the great number of European types of mammals represented in North America, the only authentic species yet found, common to the two continents, is the hairy mammoth (*Elephas primigenius*). This would indicate that the European genera which spread to America did not find a direct route permitting a sudden introduction of unchanged species, but rather that they found their way slowly across the great conti-

nent of Asia and thence into North America, the transit of European species occupying a sufficiently long time of accomplishment to allow a recognizable change of characters. Within the great continent of Asia there was probably also a common center of dispersion from which both Europe and North America derived many species of closely allied forms. At the close of the Pleistocene, therefore, the greater part of the fauna of North America was probably the result of dispersion from Europe through Asia, and directly from Asia to North America by way of the Alaska-Siberian land bridge.

The present distribution of the living mammals also strongly bears out this conclusion, for all the introduced North American species more closely resemble their relatives in the Asiatic provinces than they do those of Europe, while all the Old World genera having American representatives are either purely Asiatic types or if European also extend their present range across Siberia to the Bering strait. This is true not only of the large mammals, as the moose and reindeer, which range from northern Europe eastward across the whole of Siberia, and the elk, or wapiti, and mountain sheep, which are of Asiatic origin, but of such widely diversified forms as the beaver, the microtine rodents, the hare, the marten, the weasel, the otter, the wolverine, the wolf, the large brown bears, and probably the red fox. A strong argument for the comparatively recent existence of this northwest land bridge may be derived from the fact that the North American species of Old World origin still closely resemble their Eurasian relatives, those of either side of the Bering strait not differing from each other more than related species of adjacent provinces within either continent.

Regarding the probable prevailing physical conditions, at the close of the Pleistocene, that would have induced primitive man to cross such a land bridge as existed between Asia and Alaska, the mammalian evidence seems to show in a fairly conclusive way that the connecting strip was comparatively broad and vegetative, thus forming an inhabitable land route by means of which, either in pursuit of his favorite game, or through his natural instinct for travel and exploration, man might easily have found his way by

slow degrees across from Asia into North America and thence down the Pacific coast. Sufficient reasons for this conclusion are fairly obvious from a study of the foregoing statements regarding the successive invasions of North America during the Pleistocene by such a wide variety of forms. Few of these invading forms were strictly Arctic species. Most of them were forest living, or forest and plains species. Hence, while it might be possible for one or two species of the large and hardy boreal types to have reached America through having been driven across a barren waste or ice sheet, of considerable extent, by a long-continued storm or some other extraordinary means, a land connection of such a character would ordinarily prove almost as effective a barrier to a majority of the species that found their way across as a high mountain range or a strip of open sea. The great number and wide variety of forms of mammals that must have crossed this land bridge seem, therefore, to indicate that plant dispersion must have preceded that of the animals, which, in turn, preceded the coming of the first primitive man to America. The complete cutting off of the Arctic current and the consequent increased influence of the Japanese current is sufficient reason for supposing that the climate, at least along the coast route, was comparatively warm and equable.

Summary

The evidence of vertebrate paleontology, therefore, while it may not be altogether convincing, seems to indicate the following:

1. That man did not exist in North America at the beginning of the Pleistocene, although there was a land connection between Asia and North America at that time, permitting a free passage for large mammals.
2. That a similar land connection was again in existence at the close of the last glacial epoch, and probably continued up to comparatively recent times, as indicated by the close resemblance of related living mammal species on either side of the present Bering strait.
3. That the first authentic records of prehistoric man in America have been found in deposits that are not older than the last glacial

epoch, and probably of even later date, the inference being that man first found his way into North America at some time near the close of the existence of this last land bridge.

4. That this land bridge was broad and vegetative, and the climate presumably mild, at least along its southern coast border, making it habitable for man.

THE DISTRIBUTION OF ANIMALS AND ITS BEARING ON THE PEOPLING OF AMERICA

BY AUSTIN HOBART CLARK

In considering the possible routes by which the human population, almost universally acknowledged to be of foreign origin, reached America, it is of importance to consider the evidence to be gathered from the study of the present distribution of animals, for, after all, men, though singularly specialized in regard to the brain, are but animals, subject to the same stimuli, to which they react, particularly when living in a primitive state of cultural development, in essentially the same way.

Among the so-called lower forms of life no two types agree in the details of their distribution, though the same general facts hold good for all. As a basis for discussion we should choose a group the component species of which are, from their habitat, the least subject to the influences of climatic change, as well as the least subject to the ravages of external and internal enemies and parasites; a group whose species, through the developmental history of the individuals, are the least likely to be carried by winds or currents, and subsist upon food of such a character that an adequate food supply is everywhere present and everywhere practically uniform in quantity and in quality; a group composed of forms stable enough to retain a specific, or at least a generic, entity under widely varying geographical conditions, as well as under slowly changing local conditions; and a group which possesses a reasonably complete paleontological record, yet includes few enough forms so that all of its constituent species may readily be borne in mind. But we must never lose sight of the fact that conclusions based upon the study of a single group of animals must always be tested in the light of data acquired from the study of other groups.

In the whole animal kingdom the one group which best meets the several requirements detailed above is that of the Crinoidea. The central East Indian region is the center of distribution of the present crinoid fauna of the world, and apparently was also the chief center of distribution of all the faunas of the later geological horizons.

The faunal conditions in the regions about Australia show that the Australian continent was once much larger than it is now, and included New Guinea and the Aru islands, though not the islands farther to the west and to the north. This old Australia gradually subsided, especially toward the northwestern and northeastern corners, restricting the land area to the dimensions of the Australia of today.

The southern part of Australia was once connected with southern South America, and it was by way of this land bridge that temperate South America received a large part of its present fauna.

From the faunal conditions in the Lesser Sunda islands we are led to assume a more or less complete, though not necessarily continuous, land connection between these Lesser Sunda islands, Madagascar and southeastern Africa, possibly including the Maldivé islands and Ceylon. While among the terrestrial forms this connection is just as emphatically indicated, we find little or no trace of it in continental Africa, for the reason that Madagascar was very early cut off from Africa before the connection with Asia was established, this connection having resulted in admitting into Africa a fauna that very soon entirely changed the aspect of its original fauna, which we now find indicated in isolated colonies on Madagascar and on the Mascarene islands.

We are similarly led to suggest the existence, at a somewhat later date, of a great South Sea Island continent or at least of a great South Sea archipelago, of which New Zealand, the Marquesas and Hawaiian islands, and Japan indicate the eastern and northern boundaries, and the Lesser Sunda islands the southwestern, being connected with New Zealand in some way to the northward of New Guinea. It is possible that the Philippine islands, Borneo, and Celebes, as well as Java and Sumatra and the southern part of

Indo-China, formed the highest part of this South Sea Island land. This would account for the generalized nature of the present crinoid fauna of these localities, the component species of which practically all exhibit primitive characters, as a comparatively recent introduction into an area recently submerged. This fauna cannot be satisfactorily resolved into any distinct constituent elements; yet it is singularly heterogeneous and diversified; hence it appears to indicate not only an area of submergence but also a region of constant and comparatively sudden geological changes, which have constantly rejuvenated the fauna and throughout the region have prevented the crystallization of the various forms into fixed and definite faunal types.

Along the western coasts of South and North America, from the Straits of Magellan to the Aleutian islands and thence down the coast of Kamchatka and the Kurile islands to Japan, the fauna is quite uniform. This fauna presents a number of peculiarities; in its northern part all of the component species, while near the mean of their respective genera, are exceedingly variable, and present all the characters shown by species introduced into a new country. We may therefore assume that the fauna has reached this portion of its range within comparatively recent centuries. In the Okhotsk sea, about the eastern and southern coast of Sakhalin, and thence down the west coast of the Sea of Japan as far as Korea, we find an arctic fauna similar to that of the seas from western Greenland and Nova Scotia to the Kara sea, though entirely disconnected from it. A trace of this fauna also is found just east of the Commander islands, dividing the typical Magellanic fauna of the region.

The Magellanic fauna scarcely intrudes into the Bering sea beyond the Aleutian islands, and is not known in Kamchatka except along the southern coast. Thus we assume from the data at hand a very broad connection within comparatively recent epochs between northwestern America and northeastern Asia, extending at least as far south as the Aleutian and Commander islands, and probably taking in on the north Wrangel island and the New Siberian islands. Such a land, washed by the warm currents from the southward, would have an equable temperate climate, something like that of Puget sound.

This Magellanic fauna is cut in two by a southerly extension of the arctic fauna, which has spread as far southward as the Sea of Japan. This is a fact of the greatest significance. The breaking through of the broad Asiatic-American land connection by a strait leading to the Arctic ocean would permit of the southern extension of a cold current from that ocean. That such a cold current from the Arctic ocean actually existed is indicated by the arctic species in the seas of Okhotsk and Japan and east of the Commander islands; moreover, this Arctic-Pacific connection must have been of considerable depth, for one of the species groups that has intruded into the Pacific does not occur above 743 fathoms and is otherwise confined to the colder stagnant bottoms of the Arctic. It seems probable that, once a current cuts through a land, the strait formed is very rapidly deepened to the limit of the action of the current; thus the considerable depth of the channel between the Commander and western Aleutian islands does not necessarily indicate any great age; at any rate it must have been carved out since the extension of the Magellanic fauna to the region, as this fauna occurs on either side of it, but could not ever have passed through it. As the northern portion of the Magellanic fauna is the youngest fauna known to us it is evident that the intrusion of the Arctic types into the Pacific across this part of the Magellanic fauna must have been a very recent occurrence.

The entry of this cold current into the Pacific across the Bering Sea region must have had a most powerful effect upon the fauna and flora of the lands on either side of it. As a result these lands became much colder and the fauna, especially the terrestrial, was forced to fall back to regions unaffected by its influence so that similar forms occurred on both coasts of the Pacific in widely separated localities far to the southward of their original habitat.

More recently there appears to have been a rising and a filling in of the region about Bering strait, especially toward the Alaskan side, by ice- and water-borne material, by which the effect of the Arctic current has been lessened, so that Kamchatka and the Commander islands have again become capable of supporting a more or less temperate fauna and flora which, however, are not

derived from the remnants of the original fauna and flora but are entirely new introductions from the southward that have driven the arctic fauna and flora northward before them. This accounts for the difference in the fauna and flora of corresponding parts of Asia and America in the Bering Sea region; in America we find abundant traces of the old Bering Strait fauna and flora, but in Asia these have been largely submerged by recently developed types, which have spread northward from more southern regions.

We have good circumstantial evidence that man existed long before the Bering straits were broken through, though not that he existed in this region. We know that in Europe man was contemporaneous with the mammoth, for we find bones with figures of the mammoth rudely drawn upon them. Thus we may suppose that man was also contemporaneous with the mammoth in Asia. Now the submergence by which the Bering sea was carried below the surface also cut off a large island from northern Siberia. As the subsidence continued, this island became gradually smaller and the mammoths upon it therefore became crowded into a smaller and smaller area, where at last they all died. The enormous numbers of mammoth skeletons on the New Siberian islands (now one of the chief sources of ivory) can be interpreted only as the result of the separation of these islands as a very large island from the mainland and the gradual restriction of this land mass in size until it reached its present dimensions. This possibly took place after eastern Asia was inhabited. But to join the New Siberian islands to Siberia the general surface of the land would have to be raised sufficiently to bring most of the bed of the Bering sea above water; therefore we are reasonably safe in assuming that the land connection across the Bering sea was in existence after man could have inhabited the region. The extinction of the mammoth in Asia was probably due to the breaking through of the cold arctic current, by which the climate was made too severe for such a specialized type. It could not migrate to the southward because of the deserts and the mountains in that direction and, deprived of a large part of its food supply by the dying away of the rich subtemperate flora, it perished entirely. All of the more specialized animal types, like man, the

higher apes, and all large mammals, live under the most delicate ecological adjustment and are singularly sensitive to any environmental change. Let the ecological factors under which they live be modified ever so little, and they disappear.

The highlands of Central and South America and the West Indies were once joined with south-central Africa and Madagascar; but the disruption of this land bridge, which was possibly contemporaneous and continuous with that from Africa to the Lesser Sunda islands, occurred before the intrusion of predacious mammals, or indeed of any of the larger mammals, into Africa from Asia.

In the Indian and Pacific oceans we thus find indicated:

1. An Indian Ocean land, including southeastern Africa and Madagascar and extending thence to Ceylon and the Lesser Sunda islands from Sumbava to Timor, and probably more or less connected with Australia. Very early this became cut up, disintegrated, and almost totally disappeared.

2. Subsequent to this (as is indicated by more numerous and more specialized diagnostic species) a South Sea Island land or gigantic archipelago, the boundaries of which are delimited by Formosa, southern Japan, the Hawaiian and Marquesas islands, New Zealand, New Caledonia, the Solomon islands, New Britain, the Moluccas, and the Lesser Sunda islands. Possibly the Philippines, Celebes, Borneo, Java and Sumatra, and the Malay peninsula also formed part of this territory. This also subsided many ages ago, the subsidence beginning and being most marked in the eastern part, and becoming broken up into small islands, which in many cases have succeeded in remaining above the sea through the building up of volcanic chimneys as they went down, or by building up coral chimneys on the crests of their mountains, or by both processes combined.

3. Possibly contemporaneous with this last, though quite separate from it, an Australian continent including Australia, New Guinea, and the Aru islands. This has also subsided, especially in the northern part where a broad sea, the Arafura sea, now covers a large area which was once land.

4. A land, possibly a northward extension of the Antarctic con-

continent, connecting Australia and southern South America. Certain features of the culture of the Patagonians and Fuegians have been interpreted as indicating an affinity with the natives of Australia, but on biological grounds the possibility of human migration from Australia into Fuegia is very remote.

5. A very broad land with an equable temperate climate connecting Asia and America, at a time long subsequent to the above-mentioned lands.

In the Atlantic ocean we find indicated:

1. A land including the highlands of Central and South America and extending to south-central Africa and Madagascar; this probably became broken up at the same time that the land connecting Madagascar with the Lesser Sunda islands disappeared; it was possibly a western extension of the same land mass.

Summary

According to the evidence of biological paleogeography, man probably reached America over the broad land that formerly existed across Bering sea, and since he reached America this land connection became disrupted and the whole region acquired an Arctic climate.

A few accidental visitors may have wandered across the Pacific from the South Sea islands; but this could have been only after the perfection of the art of navigation by these people, and America was probably settled long before navigation or boat building had reached any advanced stage. It is unlikely that any number of people ever came across the Pacific because of the enormous distance to be traversed with both wind and current against them. Such visitors as might have come by this route can be considered only as purely accidental; their survival on arrival is very doubtful, for primitive men, like the anthropoid apes, are singularly sensitive to any change in their environment. To be worthy of serious consideration any migration route by which primitive men may be supposed to have entered a country must be shown to possess the possibility of very gradual acclimatization and very gradual adjustment to the new conditions. The difference between the conditions in the South Sea islands and on the western coast of South America

would in itself seem to be a conclusive argument against the settlement of America by that route.

There is no evidence that man could have come from Africa by the Afro-Antillean land bridge; probably Africa itself was uninhabited by man at the time that this bridge was disrupted.¹

BEARING OF ARCHEOLOGICAL EVIDENCE ON THE PLACE OF ORIGIN AND
ON THE QUESTION OF THE UNITY OR PLURALITY OF THE
AMERICAN RACE

BY WILLIAM H. HOLMES

The problem of the origin of the American race as such may be quite a distinct problem from that of the origin of the human race, that is to say, of the genus *Homo*, since, if the racial elements going to make up the population of the New World were decidedly diverse—as partly Mongolian, partly Malayan, and partly European—the place of amalgamation would be the place of origin, and that place would be America. Indeed, it seems self-evident that an American race, howsoever evolved and constituted, must have its place of origin on American soil, since, if formed elsewhere, it would not be American, save by adoption.

The problem is somewhat complicated by the possibility that the human group may have had its origin within the land area now embodied in the continent called America, in which case since we agree on the question of primary racial unity—the Old World races must appear in the light of offshoots of an American stock, but the proposition that the American continent nurtured the human stem is not well sustained by the evidence so far adduced; besides it is incredible that the American race, represented today by hardly more than ten million people of homogeneous physical type and primitive culture, should have peopled the Old World with three races highly differentiated in physical type and in cultural achievement and comprising the bulk of the world's population. With regard to this question, the consensus of opinion among students of the subject favors the view that the Old World gave birth to the human kind. Traces of human occupancy are found in the Old World associated

¹ The evidence afforded by the study of recent marine organisms indicates that this land bridge was disrupted during the Cretaceous.

with geological formations that may be safely assigned to the close of the Tertiary period, and it is incumbent on those who hold to the theory of American origin to establish an earlier occupancy of the New World. Two regions only in America have furnished testimony worthy of serious consideration in this respect—California and Argentina. The testimony in both of these cases is striking and picturesque, giving American man a place in the far Eocene, and is supported with much enthusiasm by a few students who are ready to stake their scientific reputations on the outcome. Recent investigations relating to North American as well as South American early man show that the testimony, if it is to stand, must have much additional support.

In view of these conditions, the theory of an autochthonous origin of the American race may be set aside, and the problem of the arrival in the New World of racial elements originating in the Old World need alone receive consideration.

Archeology can supply but meager evidence of the early arrival of migrating peoples. Relics of human handiwork have been reported from the glacial deposits, which are post-Tertiary, but they are few and far between, and even if properly authenticated, they can tell no story of racial origins; they are not labeled. We may learn from such evidence that man was present at a definite geological period and that his culture was primitive, but we get no clue as to his race or to the direction from which he came. The evidence furnished by osseous human remains is negative as to both great antiquity and unity or diversity. In two cases crania presenting characteristics quite distinct from those of the known aborigines have been brought to the attention of anthropologists—the low-browed skulls from the bluffs of the Missouri, which Dr Hrdlička has shown to correspond to skulls of members of recent tribes; and two crania equally remarkable and un-Indian in type obtained from the glacial gravels at Trenton, which Dr Hrdlička has shown to be of peculiar German or Dutch type.¹ Possibly they belong to Hessian hirelings killed in the battle of Trenton.

The archeologist, in pursuing the inquiry regarding racial origins

¹ Hrdlička, Aleš, *Bull.* 33, *Bureau of American Ethnology*.

for America, must then turn to the great body of antiquities that are generally recognized as belonging to the Indian tribes and their ancestors. Like the race itself, these remains form a comparatively homogeneous unit, being confined practically to the stone phase of culture. It is observed that this body of material does not seem to contain any element or trace of pre-Columbian European influence back to the beginning of our civilization. The Indian tribes were without Old World beasts of burden and without wheeled vehicles, or sail-rigged craft, the great modern agencies of transportation; they had no cattle, sheep, or goats, potent factors in the development of Old World sedentary life; they had no knowledge of iron or the smelting of ores, essentials in the development of the civilized state; no keystone arch, a requirement of successful building; no glaze or wheel in the potter's art; no phonetic alphabet, the stepping-stone from barbarism to civilization. We conclude from these facts that America had no important contact with the cultured peoples of the Old World before the sailing of Columbus. What, then, can archeology show that has a significant bearing on the arrival of trans-oceanic peoples in such numbers as seriously to affect the make-up of the American race?

Omitting for the present any consideration of the open gateway from Asia to America at the far northwest, through which we all believe the chief currents of population came, let us examine such evidence as may be available of arrivals through other avenues of approach. As the continents stand today, and with primitive means of migration, there seems small chance of the arrival of wayfarers in any considerable numbers on the American shores, and the evidence of such arrivals must be far to seek and difficult of evaluation. A primitive boat's crew reaching the western continent as voluntary voyagers or as wayfarers brought unwillingly by the winds and currents, even if hospitably received by the resident population, would leave no physical trace of their presence that would last beyond a few generations, and the culture they happened to represent might not find even a temporary foothold. Yet germs of culture have sometimes wonderful potentialities, and a very simple device, technical suggestion, or tenet of belief might catch

the primitive fancy, engraft itself upon the native culture, and in a very short period of time influence the whole current of its development. The question is, however, one of race and not of culture, and the presence in America of numerous culture elements coming from trans-Atlantic sources, even if plainly manifest, might mean very little with respect to racial make-up.

We may now inquire into the nature of the archeologic evidence which might seem to warrant the conclusion that foreigners had arrived even in numbers sufficient to plant a few germs of culture; but first it is necessary that we exclude from the body of material to be considered all handiwork that bears the taint of post-Columbian influence since modern Europeans reached American shores. We have to consider also—lest we misinterpret the evidence—the similarities, analogies, and identities between the culture achievements of peoples quite foreign to one another historically and genetically that arise and must arise from the like constitution everywhere of the human body, the human mind, and human environment. It is not wise to throw evidence of this class entirely overboard, for it may possess value of very different degrees—the similarities ranging from the merest fortuitous resemblances to correspondences so close and intimate that actual intercourse may be safely inferred. The nature of such evidence may be briefly considered.

The student examining certain collections of primitive antiquities discovers that a particular form of chipped flint knife-blade occurs in America and also in the Old World, and explains the occurrence by the oft-observed fact that with given state of culture, given needs, and given materials, men of all races reach kindred results. When, however, he observes that the blade of the knife in each case is hooked at the end, keen and highly specialized, he wonders how such correspondence could occur. Pressing his investigation further, he discovers on the two continents other knife blades of chipped flint with curved and keen point and identical specialization to facilitate hafting, and a further identical elaboration for purposes of embellishment, and he begins to inquire whether the people concerned in the making of these two groups of artifacts are not related or have not

in some way come in close contact. His interest is intensified when he observes that the groups of closely identical blades occur in two trans-oceanic areas at points of nearest approach, and also not in any case at more remote localities on the respective continents, and he is astonished to discover further that the two areas involved are connected by oceanic currents and trade winds by means of which seagoing craft could make the ocean voyage from continent to continent with comparative ease. Later he finds that other objects of handicraft belonging to these adjacent areas have similar correspondences, and his previous impressions are decidedly strengthened. When going more deeply into the investigation, he learns that similar phenomena occur elsewhere, that in numerous localities on the shores of the one continent the culture traces have close similarities to those of the adjacent trans-oceanic areas, and no such resemblances elsewhere, and he concludes without hesitation, and concludes safely, that contact of peoples and transfer of trans-oceanic cultures have taken place not only at one but at many points.

Now, this is a purely suppositional case, but it is suggestive and justifies us in pursuing further in this direction the interesting problems of American origins. I may call attention to certain noteworthy analogies that do occur between American and foreign archeological remains. In New England and farther north we find a highly specialized form of the stone adze usually known as the gouge, which is abundant in the region mentioned, but fades out gradually as we pass to the south and west, with rare outliers in the Carolinas, the Ohio valley, and the western Lake region, but not appearing elsewhere on the continent. It does appear, however, in northern Europe where the Atlantic is narrowest and most fully bridged by intervening islands. Within the same region in north-east America, and thinning out as does the gouge to the south and west, is an object of rare and highly specialized form, an ax-like implement, known as the bannerstone, with perforation for hafting and extremely varied wing-like blades. It is not found elsewhere in America. In northern Europe we find a drilled ax of similar shape. It is a noteworthy fact that this implement in the Old World was probably a thing of use, while in America its functions were sacred and

ceremonial. It may be worth while to suggest the possibility that in prehistoric, pre-Ericsson times the germ of this type of implement found its way across the intervening seas, and that, being regarded with veneration, it became a symbol of exceptional regard.

On the Atlantic shores of America, in the West Indies, and in Brazil there are certain forms of implements and pottery that resemble more closely the corresponding fabrications of the Mediterranean shores than do those of other parts of America. In the Isthmian region we find works in gold and silver and their alloys that excite wonder since they display skill of an exceptional, even remarkable, kind, and the methods employed, as well as the forms produced, suggest strongly the wonderful metal craft of Nigerian tribes of old Benin. And we observe that the trade winds and currents of the Atlantic are ever ready to carry voyagers from the African shore in the direction of the Caribbean sea.

Even more remarkable and diversified are the correspondences between the architectural remains of Yucatan and those of Cambodia and Java in the Far East. In both regions the chief structures of the cities are pyramids ascended by four steep stairways of stone, bordered by serpent balustrades and surmounted by temples which employ the offset arch and have sanctuaries, altar tablets, and glyphic inscriptions. The walls are embellished with a profusion of carved and modeled ornaments and surmounted by roof crests of elaborate design. There are present also, as supports for the great stone tables and the lintels of the doorways, dwarfish Atlantean figures duplicating those of the antipodal cities. Some of the figures represent whiskered men. The significance of all this has been sought again and again without satisfactory result, and I shall not here venture to present an explanation.

On the Pacific side of the American continent strange culture coincidences occur in like degree, seeming to indicate that the broad Pacific has not proved a complete bar to the intercourse of peoples of the opposing continents. It has been often remarked that the faces of modeled and sculptured figures in southern Mexico have a Mongolian cast and that the eyes are decidedly oblique. The stone adzes and pestles of the northwest coast resemble the adzes

and pestles of the Pacific islands more closely than they do the corresponding tools of the eastern shores of America, and the peculiar flat-bodied stone club or *mere* of the Samoan and other islands is distributed along the Pacific coast and scattered sparsely over the adjacent regions to the east. Passing over other instances that might be cited, we find that we have completed the circle of the continent and are approaching, as has often been done before in the study of these problems, the main gateway to the continent at Bering strait, about which enough has already been said during this discussion. Through this gateway at one period or another the main currents of incoming people have passed, but the time may have been long and the racial elements diversified, so that the actual place of origin of the American race as such would be the place on the American continent where these elements were remodeled into a new people.

The question of the unity or plurality of the American race is thus a question simply of the unity or plurality of the elements embodied in its make-up. If the cradle of the human race was in the Old World, the American race would consist of such elements as happened to find their way to the uninhabited continent; if in very early times the elements might be derived from some paleo-Asiatic or other early race not now in evidence; if later, they might be one or more of the known races of the cradle continent; if more than one, there would be plurality of racial elements in the American composition; if only one, the condition known as unity would prevail.

I agree fully with Dr Hrdlička that Asiatic peoples must have furnished the great body of immigrants to America, but it seems to me also highly probable, considering the nature of the archeological evidence, that the Western World has not been always and wholly beyond the reach of members of the white, Polynesian, and perhaps even the black races.

SOME ETHNOLOGICAL ASPECTS OF THE PROBLEM

BY ALICE C. FLETCHER

Looking at the tribes that dwell on this continent, and particularly in North America, one notes many and important ethnological and psychological resemblances. To give a few of the more striking examples, we see that the idea of duality is generally expressed in their social organization, not that each tribe is divided into two parts or sections but that the various kinship groups composing a tribe are apt to be so combined as to express a recognition of the apparently dual natural forces, represented by Day and Night, Summer and Winter, Sky and Earth. This duality concept sometimes takes on an anthropomorphic form and the forces are regarded as male and female, or, they are reflected in social conditions, and represented as War and Peace. The two parts always stand for dissimilar but complementary forces or powers.

Not only in the tribal organization does this duality concept appear, but it is to be found reflected in many of the religious ceremonials of the people. It is to the latter that one must turn for the more direct expression of "religious ideas." It may safely be stated that among the American race what may be termed "religious ideas" are fundamental to all ceremonials and upon them is built the tribal organization.

These "religious ideas," briefly stated, are founded upon the native conception of the cosmos. In this conception man views all things from his own personality and from this standpoint predicates his relationship to animate and inanimate nature.

Conscious within himself of an ability to move and to bring to pass, he regards motion, whether of body or of mind, as a universal ability and as the simplest and most fundamental manifestation of a mysterious, indwelling power that has brought all things into existence and is the cause of all movement; of the winds, the clouds, the storm, the rivers, the growth of vegetable forms, the activities of animals, and the physical and mental life of man. There is no visible thing within which this mysterious power does not dwell and that is not made active or stable by it. To man, this mysterious

power is invisible and only knowable indirectly through its manifestations in nature and living forms. Since all things (for nothing to the Indian is strictly inanimate), including man, derive life and motion from this mysterious power, all things are regarded as, in a sense, related to each other, because of the mysterious power that pervades and sustains all natural forms.

Such a view makes possible a psychical as well as a physical connection between the Indian and all natural objects and renders conceivable the belief that there may be a possible action and reaction between the various natural and animal forms and man.

This conception of man's relation to nature and to the mysterious power that animates and pervades all forms finds expression in a rite that is nearly if not quite universally observed among the natives of our continent, namely, the rite in which man seeks to appeal to this mysterious power through the chanting of prescribed rituals during a lonely vigil and fast, in the hope that he will receive in a vision the sight of some form that can impart to the suppliant added strength and ability for achievement. The apparition seen in a vision is generally of some beast or bird, although other forms sometimes appear. Now, it is noteworthy that, so far as known, the animal forms so seen, and those that are represented in the various tribal ceremonials, or serve as designations of kinship groups, all belong to the fauna of the recent geologic age. No survival of an extinct species has as yet been discovered to have a part in any rites among the different tribes.

Mythical and symbolic creatures have part in some ceremonials, but they are clearly the creations of man's fancy, formed by him to express certain of his ideas, and they never had any real existence.

While appeals by man to an invisible power through fasting and prayer are not uncommon in other parts of the world, yet, the rite so generally practiced in America, by the youth at maturity, or by the man who seeks to lead, or to obtain magical powers, shows such similarity as to suggest a past unity or derivation from a common source ancient and traditional; here and there this rite is augmented by tribal or ceremonial peculiarities, but fundamentally it remains the same.

It seems not improbable that this widespread rite has been a factor in the development of one of the characteristics of the American race, that is, a mental seriousness. This seriousness is present in all the Indian's practices, whether they savor of rank shamanism or belong to social or ceremonial procedures replete with geniality, united movement, and song.

From these and numerous other facts it seems safe to conclude that the Indian shows throughout a considerable resemblance in his fundamental subjective and objective conceptions. His mentality is distinctly of one type, and on the whole may be regarded as well advanced in scale. These conditions lead the ethnologist to the belief that the Indian represents one branch or a part of one branch of humanity, and a branch that in mental development is now, and probably was when it reached this continent, much above what must have been the more primitive forms of man.

SOME ETHNOLOGICAL ASPECTS OF THE PROBLEM

BY WALTER HOUGH

The general interest in the early peopling of America has been long sustained, and many branches of science have contributed in the effort to elucidate the problems connected therewith. Ethnologists have endeavored mainly to trace the culture affinities with other regions, especially with the contiguous regions of Asia and America, and much success has rewarded their studies. For a number of years I have been interested in noticing similarities in arts of wider scope geographically, and have compared the arts of tropical America with those of Malaysia, the latter area being now quite thoroughly represented in the National Museum through the immense collections of Dr W. L. Abbott.

The question of acculturation is beset with great difficulties, which render a clean-cut determination of the transmittal of arts and inventions from one people to another only rarely possible. The lacunæ in our knowledge are in some degree responsible, since the migrations of inventions proceed by obscure paths and are almost never recorded by history; in effect, the modern ethnologic min-

glings are on a par with those of prehistoric times, which, although fascinating, leave us often breathless after a long and fruitless chase and receptive to theories of independent invention as the other horn of the dilemma.

It is an axiom of science that one should err on the side of excessive caution in the effort to get at the facts of similarities of invention, and no other subject of anthropology has produced so many harebrained experiences.

It is evident that the transfer of arts has been common in sub-arctic Asia and America and some of these arts have wide connections. A few of these may be discussed.

Drill.—The most specialized form of fire-making and boring apparatus, the four-part drill, which exists in America among the Eskimo and some Canadian Indians, is found in eastern Asia, India, and Borneo, as well as in Europe. The pump-drill has a wider distribution in America, Europe, and Asia, but is not found in Africa. The flint and pyrites strike-a-light is distributed in Europe, where it occurred in Neolithic times, and in far northern America.

The simple two-stick fire-drill has a world-wide distribution, and is the only form common to America. In Borneo, however, the diversity of methods points to a composite formed by waves of population.

Armor.—Plate armor like that of Japan and Korea, and the horn armor of Mindanao and other East Indian islands, have been observed on both sides of Bering strait, the most perfect type made of plates of ivory occurring among the Eskimo. Among the North Pacific Indians, armor made of plates of wood occurs, to the southward combinations of rods and plates of wood, and in California rods alone are employed. This grouping of methods appears from the literature to have been repeated in part in eastern United States, having a distribution, so far as we have data, into Mexico and Central America, but apparently not into South America.

Lamp.—The lamp is extra-American, belonging with simple saucer lamps of Asia and Europe. The Eskimo lamp, however, is a substitute for the stove and fireplace of other peoples and is

unique in the development of the wide-stretched wick line, as well as in its occurrence in the Western Hemisphere. The lamp here has been molded in the hands of the Eskimo, who are the most ingenious aborigines in the world, and whose very existence depended on this homely utensil.

I have omitted a large series of similarities between America and southern Asia, which may or may not indicate relationship but which are inconclusive and subject more or less to explanation as independent or environmental inventions. Among these are the skirt dress, rain coat, palm industries, ear and lip plugs, head compression, teeth inlay, simple fire-drill, calumet, spoon censer, nose flute, lapped edge baskets, and others.

There seem, however, to be inventions having a greater significance which have come into America and there taken a wider range than those just mentioned. These are as follows:

Blowguns.—The distribution of the blowgun appears to follow the Asia-America route and has its greatest use in the two extremes, Malaysia and South America. It must be acknowledged that between Malaysia and eastern North America there is a wide gap, which up to the present cannot be filled, except that survivals, as a child's toy, may indicate connection. The distribution in America begins with the Iroquois, extends to the Gulf, appears again in Mexico and Central America, and becomes widespread in tropical South America. The blowgun has not been found in Africa, nor in any other portions of the world except in those just mentioned. It does not depend upon the presence of natural tubes such as those furnished by the bamboo, cane, and other grasses. It is made in both extremes of its range of two strips of wood grooved and joined with cement and wrappings of bark, as may be seen in the specimens of the Jakuns of the Malay peninsula and those of the tribes of the upper Amazon. In Borneo since the introduction of iron the boring is made in solid wood by means of a bar of that metal. The dart of the Asiatic blowgun is often tipped with poison and terminates at the other end with a core of pith, while in America the darts are often poisoned and usually terminate with a wrapping of the down of some plant. The blow-

gun does not seem to be a likely subject of independent invention, on account of the complexity of its conception and the difficulty of its manufacture.

Sling-bow.—In connection with the blowgun in Asia and America the sling-bow, which appears alone at the two extremes, is interesting. So far as known, the sling-bow occurs only in the valley of the Amazon and in Malaysia. It consists of a bow with a double bowstring and has a small pouch in the middle to carry the clay pellet. No particular conclusions can be drawn as to the presence of the sling- or pellet-bow in both areas, since if there ever were any intermediate steps, they have been lost. It is only the fact that the blowgun and pellet-bow appear together in both areas that would justify the belief that the two inventions had a common origin.

Bark Beaters.—Still another invention, that of the grooved bark beater, of almost world-wide diffusion, has found its way into America; by what route or by what means it is difficult to say. This implement consists of a round or square short club, whose surface is covered with parallel flutings. This invention has arisen in the areas of certain tropical trees, whose matted bark can be expanded more readily by a grooved club. The most familiar product of this character is the tapa of the Polynesian island, or the coarse red cloth of equatorial Africa. The use of this grooved club perhaps was the basis of all primitive paper-making. Irrespective of the question of independent inventions, the easiest route by which this method could have reached America would have been from southern Asia, where this method is practiced. It appears in America in British Columbia and Washington, where it is used on bark of a fissile texture. There are no observed traces of this implement between this area and Mexico, a lacuna which might well occur, provided the clubs were of perishable wood. In Mexico the survivals are of grooved stones to which the author had the honor of first calling attention in 1892. In Mexico this implement is used again on felted or matted fiber bark. From this region the implement is increasingly common into tropical America and from southern Mexico to the Amazon the

decoration of bark cloth in colors assumes the appearance of the art in Polynesia and the East Indies.

These matters are presented with all due reservations and not with the effort to sustain or promulgate any theory concerning the origin and diffusion of these inventions. They may be only a few resemblances amidst a vast host of divergences. On the whole, however, the appearance of these inventions in America has substantiation in the results given by Dr Hrdlička, that the peoples of America most resemble those of eastern Asia, and even if the migration of inventions does not involve the migration of peoples, it tends to show a contiguity of thoughts and preferences.

THE BEARING OF ASTRONOMY ON THE SUBJECT

BY STANSBURY HAGAR

The study of the astronomy of the American Indians does not afford any definite evidence of their unity or diversity, or of the period or place of their origin. It neither proves nor disproves their origin in America or in Asia or in any other region. But it does present facts of value bearing upon the development of their culture, of relations between the peoples of America, and of their relations with the races of other continents in the prehistoric period of America.

Astronomy is not a primitive science. Long periods of years indeed must have elapsed before the really primitive man began even to observe the stars with anything less than utter ignorance and indifference, for they were related in no manner that he could apprehend with those material needs to which his attention was practically confined. Primitive astronomy began with the systematic observation of the stars to indicate direction upon night journeys, to indicate the hunting seasons to the hunter, and later to indicate the sowing and reaping seasons to the farmer. The cosmic and the religious element of astronomy—the question as to the nature of the stars and their relation to the nature and life of man and of the cosmos—form, no doubt, one of the earliest bases of religious thought, if not the earliest, but such speculations, when they pass beyond mere wonder, surely imply a higher culture than

the practical uses of stellar observation, and therefore cannot be earlier in time. It is evident, then, that the evolution of man must antedate the beginning of astronomy by a very long period of time. Even if we could trace astronomy back to its earliest source in time and place it would afford us little or no information upon the origin of the earliest man, unless, indeed, he had remained in one spot during the whole of the long intervening period—a manifest absurdity.

Applying the above deductions to the American Indian, if he originated in America, astronomy cannot say when or where. We seem to see several foci of astronomical development, in Peru, Mexico, and Yucatan, corresponding with general culture centers in regions having a climate and topography peculiarly favorable to the advancement of culture. The astronomical lore of all these regions is too nearly identical in complex concepts to be satisfactorily explained as due to similarities of race and of environment. There must have been an interchange of ideas between them either directly or through intervening nations in pre-Columbian times, hence we cannot be certain that this lore is indigenous to any one of the three regions named. Evidence of extensive migrations and of extensive change of climate in comparatively recent times adds to the uncertainty upon this point and prevents us from determining, at least in the present state of our knowledge, even the region of the earliest astronomical development in America.

If the American Indian migrated into America from another continent in primitive times, astronomy would still be helpless to aid us in the search for the time and place of such migration because it cannot reach back to such an early period. But if this migration took place in later times or after the development of astronomical traditions, then indeed we may find in this field concepts sufficiently complex to render it possible for us to trace them back towards their birthplace. It is evident, however, that these concepts bear upon the origin of the American race only if they can be shown to be associated with the earliest race known to have existed on this continent—otherwise they will pertain merely to a later influx of an alien race into an already populated region. Pursuing this

inquiry, then, let us ask first whether the concepts of American astronomy present such analogies with the astronomical concepts of other continents as to indicate intercommunication between them.

In the field of scientific astronomy the pole star was generally known throughout North America as the pivot of the sky, and the position of the South Pole was noted by the Peruvians. At least four of the planets were known and distinguished from the fixed stars by the Peruvians, Mexicans, Mayas, and some of the other tribes. The Peruvians had observed the sun spots and a few among them were perhaps acquainted with the true cause of solar and lunar eclipses. All three peoples had divided the sky into true constellations and possessed a true solar zodiac. The Mexicans had ascertained the period of the apparent revolutions of the planets with remarkable accuracy. But nothing in these facts implies any foreign influence. The lunar and solar calendars of these three advanced nations from the standpoint of the writer's cursory study of them present little more evidence of intercommunication so far as their time periods are concerned, though the system of successive years governed by successive zodiacal signs recently discovered by Boll in Egypt and the Orient certainly suggests certain features of the Maya and Mexican calendars. The presence in Peru, Mexico, and various other parts of America of the Pleiades year of two seasons, divided by seed time and harvest, with its associated myths and rituals presents a stronger argument for intercommunication, one that has been elaborated by the late Robert Grant Haliburton, and Mrs Zelia Nuttall has published evidence in favor of intercommunication based upon cosmogony and concepts which she believes to have been associated with the celestial North Pole.

When we enter the field of symbolic and traditional astronomy the evidence of intercommunication increases. We find among the common concepts the division of the cosmos among the four so-called elements, fire, earth, air, and water, the use of the swastika to express celestial revolution, of the cross and circle to represent the fourfold division of the sky and earth, of the serpent and egg with certain astronomical associations. Among the extra-zodiacal constellations the Bear, formed by some of the stars of our Great

Bear, has been generally recognized by the tribes of the north-eastern portion of North America, probably from prehistoric times. It may be a legacy from the Northmen. The Milky Way as the Path of Souls of the northern tribes and the Celestial River farther south likewise finds European and Oriental analogies. But from the writer's standpoint the crux of the argument for intercommunication rests upon the symbols associated with the zodiac in Peru, Mexico, and Yucatan, for here we are considering not isolated analogies but an interrelated series in which the element of sequence affords an impressive guaranty against both chance and imaginative manipulation.

In Mexico the study of the elaborate system of judicial astrology may yield interesting results. So far as the writer is aware, little or no attention has yet been paid to this subject. In Peru evidence as to the zodiac is derived from the Star Chart of Salcamayhua, which names and pictures the signs, the monthly ritual which reproduces the attributes of the sign through which the sun is passing when the festival is held, and the celestial plan of the sacred city of Cuzco, which was supposed to reproduce the observed design of the sky including the signs. This plan in varying aspects seems to have been typical of several and perhaps of many of the sacred cities or theogonic centers that form such a characteristic feature of American civilization. In Mexico the signs are named and pictured by Duran, Sahagun, Tezozomoc, in the Codices, and on the mural paintings of Mitla; their attributes are described in the monthly ritual and embodied in the plan of Teotihuacan and in the day signs. In Yucatan the signs appear in the Codices, the ritual, the day signs, and the plan of Izamal.

As to possible European influence in these sources, the writer can only state his conviction that an examination of them will convince the student that such influence is either insignificant or totally absent.¹ The following table will briefly indicate the correspondence between some of the concepts associated with the American zodiacal signs and with the signs we have received from the

¹ See the writer's various papers in the Reports of the International Congress of Americanists.

prehistoric Orient. It should be understood, however, that this table refers to only a few of the more obvious analogies:

SIGN	ENGLISH	PERUVIAN	MEXICAN	MAYA
Aries	Ram	Llama	Flayer	
Taurus	Bull (Originally Stag)	Stag	Stag or Deer	Stag
Gemini	Twins	Man and Woman	Twins	Two Generals
Cancer	Crab	Cuttlefish	Cuttlefish	Cuttlefish
Leo	Lion	Puma	Ocelot	Ocelot
Virgo	Virgin (Mother Goddess of Cereals)	Maize Mother	Maize Mother	Maize Mother
Libra	Scales (Originally part of Scorpio)	Forks	Scorpion	Scorpion
Scorpio	Scorpion	Mummy	Scorpion	Scorpion
Sagittarius	Bowman	Arrows or Spears	Hunter and War God	Hunter and War God
Capricornus	Sea Goat	Beard	Bearded God	
Aquarius	Water Pourer	Water	Water	Water
Pisces	Fishes (and Knot)	Knot	Twisted Reeds	

Granting that these sequential analogies, if verified, establish intercontinental communication, we must now ask whether, if these concepts were brought into America from abroad, they seem to be associated with the earliest migration to this continent. We shall have to seek light on this point outside the field of astronomy. Professor Edward S. Morse and others have called attention to the significance of the facts that wheat was unknown in America at the time of its discovery by Columbus and that maize was then unknown outside of America; moreover, that there is little if any similarity between the more complex artifacts of America and of

other continents. It is practically certain that the cultivation of these cereals and the manufacture of the higher grades of artifacts must have preceded the creation of a zodiac, and its transmission around the world, and it is not reasonable to suppose that a migrating race having knowledge of either cereal or of artifacts would have carried with them the knowledge of the zodiac without that of their food and tools. The inference is obvious. The knowledge of the zodiac was not brought to or taken from America by the earliest inhabitants of another continent, but must have been transmitted in later times.

We must still explain how such knowledge could have been transmitted in later times without the cereals and artifacts. There seems to be but one consistent answer. The transmission was accomplished by accidental or sporadic communication with individuals of an alien race who were able to impart their mental concepts but who brought with them few or no material products. There was no general migration at this time. Let the reader suppose himself unexpectedly thrown by shipwreck among a people with whom his race has never before communicated. Grant him a few companions only, and imagine the result. How much of their civilization would they be able to impart? Probably only a few ideas. They had no cereals and their attempts to introduce their artifacts eventually failed to overcome the force of conservative habit and custom opposed to change. This is admittedly theoretical, but it seems to be the only theory which reconciles the otherwise inconsistent facts. But if this explanation is correct we see that even if the American Indian is a migrant from another continent astronomy cannot help us to say when or whence he came, because as soon as we find astronomical concepts of sufficient complexity to afford a possible means of tracing them back to an alien home they imply an advancement in culture inconsistent with the known characteristics of early American peoples, and therefore they cannot have come here with them. Astronomy reveals that there has been intercommunication with America in probably late prehistoric times, but it is silent as to what has taken place at an earlier stage.

THE BEARING OF OCEAN CURRENTS ON THE PROBLEM

BY PAUL BARTSCH

I have been very much interested in all that has been said about the origin of the North American Indian, and particularly in the remarks of Mr Holmes, who showed that the archeological features on the American continent indicate a possible multiple contact, and there occurs to me a line of thought that seems, so far, not to have been expressed by any of the speakers, namely, the ocean highways along which primitive man or his handiwork may have reached our shores from other places. Most of the evidence brought forth in the meeting seems to call for a land bridge across Bering sea, which Dr Dall showed has not existed during the time that man is known to have been on the globe. There is, however, the strong North Pacific current, which sweeps the eastern shores of Asia and is deflected eastward so as to strike the American coast about Sitka, Alaska, where a part is deflected northward over the Aleutian islands, while another part turns south and sweeps the coast of Washington, Oregon, and California, before it is again deflected seaward.

Farther south we have the Equatorial counter-current, which sweeps most of the Pacific islands and finally touches our coast in the region of Guatemala, being deflected northward along the American shores into the Gulf of California. It is quite possible that the similarity in certain ethnologic features of the East Asiatic islands and Central America may be due to a common origin which may have been in the East Asiatic islands and may have come to our shores over this route.

The west coast of South America is swept by the Peruvian current, which comes from the south coast of Australia past New Zealand to our shores.

Looking at the great ocean currents of the Atlantic, we find that we have the North Equatorial current, which is in part a continuation of our Gulf Stream, flowing past the South European coasts over West Africa where it is deflected westward, to the American shores, which it strikes in the West Indian region, whence it is deflected northward as the Gulf Stream along our seaboard (at

some little distance off shore). After leaving our shores, off New Foundland, it touches the east coast of Iceland; then passes to Europe, where a part is deflected over the British Isles and the coast of Norway; while the rest turns southward as before stated.

In the South Atlantic we have what is known as the Benguela current which sweeps the southwest coast of Africa, striking the Gulf of Guinea, from which it is deflected westward to the American shores as the South Equatorial current. This stream, upon striking the eastern point of Brazil, splits, half being deflected southward as the Brazilian current over South America; the other half northward, where it mingles with the waters of the Equatorial current to form the Gulf Stream.

It would seem, therefore, that we might expect (even after America was peopled) to find northeast Asiatic cultural elements and even man drifting to our northwest shores; Polynesian and Melanesian to Central America; Australian and New Zealandic to the west coast of South America; Southwest African to South America and the West Indies, and even eastern North America; and South European and West African to the West Indies and eastern North America.

THE PROBLEM FROM THE STANDPOINT OF LINGUISTICS

BY ALEXANDER F. CHAMBERLAIN

The appearance of Part I of the *Handbook of American Indian Languages*,¹ edited by Dr Franz Boas and published by the Bureau of American Ethnology, containing, as it does, authoritative sketches of Athapascan (Hupa), Tlingit, Haida, Tsimshian, Kwakiutl, Chinook, Maidu, Algonquian (Fox), Siouan (Dakota), and Eskimo, by such approved investigators as Boas, Swanton, Goddard, Dixon, Thalbitzer, Jones, and Michelson, makes possible a new and saner method of comparative philology with regard to the numerous languages of the American Indians past and present. The illuminating Introduction to this volume, by Dr Boas, should be read by everyone who seeks either to know something about the Indian

¹ *Handbook of American Indian Languages*, by Franz Boas. Part I. (Smithsonian Inst., Bur. Amer. Ethnol., Bull. 40.) Washington, 1911, pp. vi, 1069.

languages as such or to investigate the question of their possible relationship with forms of speech in other regions of the globe. What has been done here for North America will be done some time also for Central and South America, so that, before a student ventures to compare the languages of primitive America with those of Asia or elsewhere, he will know a large number of facts concerning their lexical, their morphological, their grammatical, and their syntactical characteristics and peculiarities, and so will be able to determine whether the resemblances observed are merely accidental, or justify the assumption of real linguistic kinship.

The older method of comparing indiscriminately and arbitrarily the vocabularies and word-lists alone of the mass of American Indian languages with those of the mass of Asiatic tongues is now hopelessly out of court for scientific purposes, though still to be met with in certain quarters, where "pseudo-ethnology" reigns supreme. The wholesale methods of a Professor Campbell, a Hyde Clarke, etc., have borne no legitimate fruit, and could bear none. Nor has anything really valuable or conclusive come from such speculations as those of Trombetti, Täuber, and others concerning the "original speech" of man, and its *disjecta membra*, which are now to be picked up here and there all over the world among the languages of all peoples, living and dead. In such studies, the facts concerning the individual development of a language here in America, its morphological and grammatical structure, as brought out by careful analysis and long-continued research, are ignored, or at least not made use of at all, and a few seeming word-identities permitted to settle a matter of fundamental significance in the history of human speech, or the development of the various types of human languages.

Another method, perhaps quite as old, was to select some one Asiatic and some one American Indian language, on the basis of a few alleged identities (again almost entirely of a lexical character, or embodied in a single morphological character, etc.), and prove that the New World tongue must necessarily have been derived from the Old World one. A familiar instance of this procedure is the comparison of the Mandan (a Siouan dialect) with Welsh, something that has not yet entirely disappeared from more or less

popular books about the Indian. It is to be found, too, in Catlin, who had not a little to say about the "Welsh Indians." Father Petitot saw Celtic elements in certain Algonquian dialects, and in 1883 read before the Association Française pour l'Avancement des Sciences a paper on the *Parallèle entre la famille caraïbo-esquimaude et les anciens Phéniciens*. Others have sought to connect the Caribs with the ancient Egyptians, etc. The Otomi language of Mexico was singled out for comparison with Chinese as early as 1835 by C. Náxera, whose Latin essay, *De Lingua Othomitorum Dissertatio*, was published at Philadelphia. Náxera has been followed by a number of ethnologists, including, as late as 1884, the French Americanist, Dr Hamy. The "isolating and monosyllabic character," ascribed to the Otomi, making it "stand separate and apart from all other American Indian languages," has been the basis of such conclusions. But Brinton in 1885, and others since, notably F. Belmar¹ in his discussion of the alleged monosyllabism of the Otomi family of speech, have destroyed the foundation for affiliation with Chinese. The Otomi and related tongues contain a majority of dissyllables, some monosyllables, and some polysyllables. The American character of these languages is fully established, and they cannot be derived from or affiliated directly or indirectly with Chinese.

The languages of the ancient Mexicans, Mayas, Peruvians, etc., probably on account of the fact that civilization was more highly developed among them than elsewhere in primitive America, have been often subject to comparison with Old World tongues, sometimes in ways even more unjustifiable than the attempt to parallel Otomi and Chinese. Mendoza² sought to prove that Nahuatl, the speech of the ancient Mexicans, was an Aryan language and a daughter of Sanskrit. Later, this theory of Aryan origin has been exploited by T. S. Denison, whose book³ appeared in 1908; it treats of the

¹ Sistema silábico en las lenguas de la familia mixteco-zapoteco-otomí. *Anales del Museo Nac. de Arqueol.*, Mexico, tomo II, 1910-1911, pp. 261-271. See also H. de Charencey in *Intern. Amer.-Kongr.*, 14te Tag., Stuttgart, 1904 [1906], p. 168.

² *Anales del Museo Nacional de México*. Tomo I.

³ *The Primitive Aryans of America*, Chicago, 1908, pp. 189. See also this author's *Nahuatl or Mexican in Aryan Phonology*, Chicago, 1907, pp. 24; and *A Mexican-Aryan Comparative Vocabulary*, Chicago, 1909, pp. 110.

origin of the Aztecs and kindred tribes, "showing their relationship to the Indo-Iranian and the place of the Nautatl or Mexican in the Aryan group of languages." The author does not hesitate to say that "the Mexican language is Aryan in vocabulary and in verb conjugation" (p. 9); "Mexican occupies an intermediate position between Sanskrit and Old Persian." Of course, no real evidence of such origin and relationship is forthcoming, although almost anything might be proved if one compares "calpolli, tribe, with cosmopolitan, its cognate," and treats "roots" after the fashion of Mr Denison. Needless to say, nothing concerning the origin of American Indian languages can be learned through such a method, which, unfortunately, will continue for some time to engage the attention even of men somewhat expert in linguistics, though not scientifically-minded enough to see the proper relation of things. Attempts to connect the Mayan tongues of Yucatan, Guatemala, etc., with languages of the Old World have failed even more conspicuously.

Paravey, in 1835, compared Chibchan, or Muyscan, of Colombia with Japanese, in a *Mémoire sur l'origine Japonaise, Arabe et Basque de la civilisation des peuples du plateau de Bogotá*, basing his work on the publications of Humboldt and Seybold, and reaching impossible conclusions.

The Quechua and Aymará languages of Peru and Bolivia, of all the South American linguistic stocks, have been most subject to theories of Old World derivation. Their supposed kinship has run all the way from Sumerian¹ to plain Aryan. E. Villamil de Rada, in his *La Lengua de Adán y el Hombre de Tiakuanaco* (La Paz, 1888, pp. 249), even argues that Aymará was the language of the Garden of Eden, another candidate for which ancient service is North American Algonquian, as maintained by A. Berloin in his *La Parole Humaine* (Paris, 1908).² V. F. Lopez's *Les races aryennes du Pérou* (Paris, 1871) and Ellis's *Peruvia Scythica* (London, 1875) have had their followers and imitators down to the present day. Others

¹ See S. A. Lafone-Quevedo, *Suguesta derivación sumero-asiria de las lenguas Kechua y Aymará*, Buenos Aires, 1911, pp. 11.

² See *American Anthropologist*, 1909, N. S., XI, pp. 123-124.

have sought to make out Semitic affinities with Quechua or Aymará or both. But all efforts to affiliate these South American tongues with Old World languages have had no scientific results, as might have been expected from the first.

The Polynesian-American comparison has been a favorite field for many linguistic explorers before and since the appearance of Lang's *Polynesian Origins* in 1860, where the *rapprochement* of vocabularies was made much of. The alleged Polynesian derivation of American Indian languages was discussed by the late Horatio Hale in a paper read before the Congrès International des Américanistes at Berlin, in 1888,¹ and the conclusion reached that "no traces of affiliation between the languages of America and those of Polynesia have thus far been discovered." It is certain also that none have been discovered since. Nevertheless, in a paper read before the Congrès International des Américanistes at Buenos Aires in 1910, Sr Anibal Echeverría i Reyes ventured the assertion that "the language of Easter Island has undoubted resemblances with the Cunza tongue, spoken in the desert of Atacama." But the *rapprochement* of the Polynesian dialect of Easter Island with Atacameñan has no more foundation than had that of Otomi with Chinese, Nahuatl with Sanskrit, or Quechua-Aymará with Aryan. It is rather surprising, however, to find an ethnologist like C. Hill-Tout² keeping to the old order of things and making, in the year 1911, a statement like the following: "Comparing the Salish language with such characteristic American tongues as the Algonquin or Déné, the affinities between these are infinitely less and more remote than those between Salish and the Oceanic tongues; and even if these resemblances should be shown to be fortuitous, and without real foundation, they are so remarkable that the classification of the Salish tongue would still be rather 'Oceanic' than 'American.'" Proof for such belief is lacking, and the Salishan can be safely assigned to the American Indian languages, like the Otomi, the Nahuatl, and others which various

¹ *Was America Peopled from Polynesia? A Study in Comparative Philology*, Berlin, 1890 (reprint), pp. 15.

² *J. Roy. Anthropol. Inst., Lond.*, 1911, vol. xli, p. 134.

writers have sought to detach from the list of aboriginal linguistic stocks native to the New World.

Summing up the evidence on this question, it may be said with certainty, so far as all data hitherto presented are concerned, that no satisfactory proof whatever has been put forward to induce us to believe that any single American Indian tongue or any group of tongues has been derived from any Old World form of speech now existing or known to have existed in the past. In whatever way the multiplicity of American Indian languages and dialects may have arisen, one can be reasonably sure that the differentiation and divergence have developed here in America, and are in no sense due to the occasional intrusion of Old World tongues individually or *en masse*. It may be said here that the American languages are younger than the American Indians, and that, while the latter may have reached the New World in very remote times via Bering strait, the former show no evidence of either recent or remote Asiatic (still less European) *provenance*. There is thus absolutely no satisfactory evidence, from a linguistic standpoint, of the ultimate Asiatic derivation of the American aborigines; nor is there any of such a character as to argue seriously against such a view, which seems, on the whole, both reasonable and probable. Certain real relationships between the American Indians and the peoples of northeastern Asia, known as "Paleo-Asiatics," have, however, been revealed as a result of the extensive investigations of the Jesup North Pacific Expedition, which have been concerned with the somatology, ethnology, mythology, folk-lore, linguistics, etc., of the peoples on both sides of the Pacific, from Columbia river to Bering Strait and from the Amur to the extreme point of northeastern Asia. The monographs containing the scientific results of the Jesup Expedition are still in course of publication. The ones most significant for American-Asiatic relations are those of Sternberg on the tribes of the Amur, Jochelson on the Koryak and the Yukaghir, and Bogoras on the Chukchee and the Siberian Eskimo. The general conclusion to be drawn from the evidence disclosed by the Jesup Expedition is that the so-called "Paleo-Asiatic" peoples of northeastern Asia, *i. e.*, the Chukchee, Koryak, Kamchadale,

Gilyak, Yukaghir, etc., really belong physically and culturally with the aborigines of northwestern America; and they probably reached the parts of Asia they now inhabit (or once inhabited, for some of them had formerly a larger area of distribution) from America at a time more recent than the original peopling of the New World from Asia by way of Bering strait. Like the modern Asiatic Eskimo, they represent a reflux from America to Asia and not *vice versa*. In brief, these peoples may be said to be "modified Americans." It is the opinion of good authorities also that the "Paleo-Asiatic" peoples belong linguistically with the American Indians rather than with the other tribes and stocks of northern or southern Asia.¹ Here we have, then, the only real relationship of a linguistic character that has ever been convincingly argued between tongues of the New World and tongues of the Old. The special resemblances of the Gilyak with the American Indian languages, from a morphological point of view, has been treated by Sternberg, in a paper read before the Congrès International des Américanistes at Stuttgart in 1904.² In his sketch of the grammar of the Yukaghir, Jochelson³ points out a number of respects in which that language also resembles the American Indian rather than the Ural-Altaic tongues of the Asiatic continent. And finally, Dr Franz Boas, in his article on "Ethnological Problems in Canada,"⁴ makes this statement: "A consideration of the distribution, and the characteristics of languages and human types in America and Asia, have led me to formulate the theory that the so-called Paleo-Asiatic tribes of Siberia must be considered as an offshoot of the American race, which may have migrated back to the Old World after the retreat of the Arctic glaciers."

The verdict of linguistics on the question of the origin of

¹ See F. Boas, *Ethnological Problems in Canada*, *J. Roy. Anthr. Inst.*, Lond., 1910, vol. XL, pp. 529-539. Also his other discussions of the results of the Jesup Expedition.

² *Bemerkungen über Beziehungen zwischen der Morphologie der gilyakischen und amerikanischen Sprachen*, *Intern. Amerik.-Kongr. Vierzehnte Tagung*, Stuttgart, 1904. (Stuttgart, 1906), pp. 137-146.

³ *Essay on the Grammar of the Yukaghir Language*, *Ann. N. Y. Acad. Sci.*, 1905, vol. XVI, pt. II, pp. 97-154. See pp. 138-140.

⁴ *J. Roy. Anthr. Inst.*, 1911, vol. XL, p. 334.

the American Indians is, therefore, that the cause of the multiplicity of stocks and languages present in the New World must be sought in the New World itself, and not by a theory of intermixture with Asiatic tribes or peoples derived from any other quarter of the globe since the permanent settlement of the land by the early ancestors of the Indians, who themselves reached America from the Old World, probably via Bering strait (though, linguistically, there is no final argument barring the peopling of America from ancient Europe), at a rather remote period. The American languages, as has already been noted, are younger than the American Indians, and have evolved in the New World without any relationship with the tongues of the Old World being probable or even possible (the peopling of Polynesia, *e. g.*, occurred too late to have influenced the linguistics of primitive America). The only proved connections between the Old World and the New World in the matter of languages are the American-Asiatic relationships demonstrated to have existed in northwestern North America and northeastern Asia. Here the net result seems to be that we must include the "Paleo-Asiatic" peoples and their languages as "American", or at least "Americanoid". Their emigration from America into Asia is, however, recent as compared with the original advent of man in the New World.

MYTHOLOGY

BY ROLAND B. DIXON

In any consideration of the question of the evidence afforded by mythology in respect to the "unity and probable place of origin of the American Indian," it is necessary to distinguish carefully between race and culture. If by race we are to understand a group based on physical characteristics and descent, then mythology is a most uncertain reed upon which to lean, for, as is now generally recognized, physical type and culture are in no way necessarily related. Mythology can thus by itself afford little evidence in regard to the racial unity or origin of the American Indian. If, on the other hand, it be a question of culture, mythology can and doubtless will supply evidence of great value in tracing the cultural

origins of the peoples of America. At the present time, however, the available material for a thorough study of American mythology leaves much to be desired. For considerable portions of North America, to be sure, the collections of myths are fairly full and representative, but there still remain large areas, particularly in Mexico and in the north, in regard to which the information is very scanty. For South America it may be said that hardly a beginning has been made, and for a large part of the continent no material at all is available.

On the basis of the evidence at hand, however, tentative conclusions may be drawn. Considered in some detail as to subject matter, the mythology north of Mexico shows that a number of areas may be distinguished within each of which a more or less distinctive group of myths is found. These areas coincide roughly, as might indeed be expected, with the main general culture areas, such as the Northwest Coast, the Plains, the Southwest, etc. The limits of these myth areas, however, are generally much less clearly marked than in the case of the general culture areas, and very commonly certain myths or myth-incidents have a distribution far wider, some extending, indeed, almost from ocean to ocean, or from the Arctic to the Gulf. In many cases the distribution of the myth-incidents can be shown to have followed trade or migration lines, and their wide dispersal can in this way be accounted for.

If, instead of considering the substance of the myths, their general character is taken as the basis, a much wider grouping appears, and such contrasts as that between the Eskimo (with their matter-of-factness and paucity of animal tales) and the great bulk of all the tribes to the southward become apparent. Similar more general groups are such as those possessing or not possessing the migration type of myth, or those in which the distinction between the mythical age and that which follows is or is not sharply marked, etc. In such a more general aspect, the mythology of Mexico and Central America is contrasted with that to the north, owing to the prevalence in the former region of Messiah-like myths—a type that extends, indeed, farther south along the western shore of South America.

Even from this wider point of view, then, it would appear that there are several more or less well-marked types of mythology occurring in America. In spite of these distinctions, however, there is nevertheless a certain similarity in character that runs through them all, such that they may be said, for instance as compared with African mythology, to present a general unity. Indeed, in the more detailed consideration of the substance of the myths themselves, it appears that some few incidents are to be found which are common both to South and North America. So far, then, as the present material goes, a general similarity in type may be said to exist in American mythology, although within this broad uniformity a number of contrasted groups appear.

In its relations to the mythologies of other areas, the most important associations are to be found with northeastern Asia. Here the degree of similarity is most striking, the myths of northeastern Asia and of northwestern America forming practically one great group, the members of which are allied not by form alone, but by actual content of the myths themselves. Except for this area, no clear evidence of relationship has been shown.

This Asiatic relationship must not, however, be regarded as furnishing evidence relating to the origin of the American Indian. It indicates a cultural relationship only, and far from pointing to an Asiatic source for the culture even, the bulk of the evidence would favor the theory that the similarity shown in the mythologies is the result of influences passing from America to Asia, and not in the reverse direction. Such cultural influence, moreover, belongs to a stage in culture far above that which must have been possessed by the ancestors of the present Indian at the time when they first came to America and belongs to a period far more recent than that at which the peopling of the American continent must have taken place.

SOME PROBLEMS IN THE ETHNOLOGY OF THE CROW AND VILLAGE INDIANS

BY ROBERT H. LOWIE

IN the course of several summers' work among the Crow and the Village Indians of the upper Missouri, under the auspices of the American Museum of Natural History, a number of interesting problems have developed, some of which may prove of general interest.

The first point to which I should like to call attention is the possible influence of the Caddoan tribes in the development of Northwestern Plains culture. Students of the Omaha have recently informed us that the earth-lodges, and probably also the Medicine Pipe ceremony, of that tribe owe their origin to the Arikara.¹ It does not seem unreasonable to suppose that the earth-lodge of the Mandan and Hidatsa may have resulted from contact with the same member of the Caddoan family. As for the Medicine Pipe ceremony, the Crows, who share this performance with their kinsmen to the east, trace its introduction to the Hidatsa, while the latter positively assert that they themselves obtained it from the Arikara. In addition we have Maximilian's statement that the Hot dance of the Ruhptare Mandan and of the Hidatsa had been purchased of the Arikara.² Here, to be sure, we must exercise some caution. The Hot dance described by the Prince comprised two spectacular features—a sort of fire-walk, and the plunging of the performers' arms into hot water. The latter has been described in connection with the Dakota *heyoka* organization;³ while the fire-dance was

¹ Fletcher and LaFlesche, *The Omaha Tribe*, 27th Annual Report of the Bureau of American Ethnology, p. 112.

² Maximilian Prinz zu Wied, *Reise in das innere Nord-America in den Jahren 1832 bis 1834* (Coblenz, 1841), II, p. 144.

³ J. O. Dorsey, *A Study of Siouan Cults*, 11th Annual Report of the Bureau of Ethnology, p. 469.

performed by the Arapaho,¹ Gros Ventres,² Cheyenne,³ and, according to the present writer's informants in the field, by the Santee. Accordingly, it would not be justifiable to conclude that, because the Mandan and Hidatsa obtained *their* Hot dance from the Arikara, the latter must have originated the performance in question.

A consideration of the older literature on the Arikara—especially of Maximilian's and Brackenridge's notes, and of Clark's data in *The Indian Sign Language*—might lead to the question whether the Arikara are to be credited with the development of the age-class system that characterizes Mandan and Hidatsa military societies. However, a series of interviews with one of the best Arikara informants now living has convinced me that that system did not exist among his people, though, singly considered, the military organizations of the Arikara reveal some analogies with the corresponding societies of neighboring tribes. So far, then, as this group of societies is concerned, the influence of the Arikara, if exerted at all, must have been confined to single societies or ceremonial details.

On the other hand, the esoteric societies of the Arikara may have had a deep influence on the secret medicine-bundle ("shrine") fraternities of the Mandan and Hidatsa. Unfortunately, we have very little information on this phase of culture for any of the tribes concerned, so that the foregoing remark must be taken solely as hinting at a possibility. In point of mythology and folklore we are in a somewhat better position, for there is a fair collection of Arikara traditions by G. A. Dorsey, and the much fuller body of Pawnee mythology brought together by this writer would enable us to determine with some accuracy the distinctively Caddoan elements. But we should have to secure much more of the folklore of the two neighboring tribes before pronouncing on the mutual influence of the Mandan, Hidatsa, and Arikara, or indeed on that exerted by the Mandan and Hidatsa upon each other.

¹ Kroeber, *The Arapaho*, *Bulletin of the American Museum of Natural History*, XVIII, p. 199.

² *Id.*, *Ethnology of the Gros Ventre*, *Anthropological Papers of the American Museum of Natural History*, 1, p. 199.

³ Mooney, *The Cheyenne*, *Memoirs of the American Anthropological Association*, 3, p. 415.

The second question I should like to discuss is of wider import. There can be no doubt that the Hidatsa and the Crows have sprung from the same stock. This conclusion is, of course, not based on a separation myth, though common to both tribes, but on linguistic considerations. Though the two languages are not mutually intelligible,¹ their relationship is very close indeed and points to a relatively recent separation. From this it might be supposed that there is also a close cultural relationship, but this assumption is not borne out by the facts. Without harping on the obvious difference in material culture between the nomadic tipi-dwelling Crows and the agricultural Hidatsa living in earth-lodges, we cannot fail to be impressed with the differences in social and religious organization.

In social organization, to be sure, there is one significant trait shared by both tribes: both are divided into exogamous nicknamed clans with maternal descent. Here, however, the similarity ends. The seven Hidatsa clans are assembled in two moieties—the Three-Clans and the Four-Clans. Whether these larger units were also at one time exogamous, I found it impossible to determine to my satisfaction. The number of Crow clans is variously set at from thirteen to twenty-four. By most informants these clans are linked together so as to form six larger units, of which the exogamy is again doubtful. Now, there is not a single clan in the Crow list that corresponds in name to any one of the Hidatsa list. The fact that both tribes employ the nickname system for their clans is of no special significance in this connection, since that system occurs in a number of other Plains tribes.

The differences become still clearer when we turn from social to religious and ceremonial organizations. Among the Hidatsa there were military organizations graded by age, with entrance into any one of them dependent on purchase. Among the Crows the corresponding societies were all coordinate, and the element of purchase was wholly absent. The Hidatsa permanently delegated police power to a single age-society; the Crow societies took turns at

¹ The majority of the older Hidatsa understand and speak Crow because they have come in contact with Crow Indians; those Hidatsa that have not met with the Crows are able to understand only fragments of Crow conversation.

policing the camp. Of course, the societies, considered singly, have many details in common, but these are also shared by other tribes of the Plains area. The divergent evolution of the Crows and Hidatsa is noticeable even in two societies peculiar to them—the Lumpwood and the Stone Hammer societies. Nothing is more characteristic of the Lumpwood society of the Crows than its rivalry with the Kit Fox society in war exploits and the annual attempts of its members to steal their rivals' wives. These features did not exist among the Hidatsa. On the other hand, the Hidatsa Stone Hammers had the privilege of entering any lodge at night and stealing what food they could get, while no such liberty was granted to their namesakes among the Crows.

None of the societies dealt with in the preceding paragraph can be regarded as having an essentially religious character, but both tribes had in addition a number of sacred organizations. Whether the series of Hidatsa women's societies—patterned in point of purchase and grading on the men's age-societies—should be classed under this heading, is doubtful. At all events, there is nothing at all parallel among the Crows. Medicine-bundle fraternities, with membership of each probably confined to certain definite families, are very conspicuous among the Hidatsa, but are also lacking among the Crows. The Medicine Pipe ceremony, as already noted, is shared by both tribes, but its occurrence among the Crows seems to be due to quite recent contact rather than to common possession before the time of separation. In either case, it is completely overshadowed, among the Crows, by the series of societies privileged to plant and harvest the sacred tobacco. Entrance into these societies, by far the most sacred and prominent in the tribe, is by a formal adoption involving heavy expense. Though individual Hidatsa secured Crow tobacco bags, it is probable that no Tobacco society existed among the Hidatsa, and certain that if such an organization did exist it played a very subordinate part in ceremonial life. Finally, there are considerable differences between the forms of the Sun dance. These would probably become still clearer if the Hidatsa ceremony were better known. With the Hidatsa the Sun dance was the performance of a medicine-bundle fraternity. Among the

Crows it was conducted by the individual owner of a doll bundle. The Hidatsa lodge was of the Arapaho-Blackfoot type, while that of the Crows was tipi-shaped. A Crow erected the lodge exclusively to secure a vision that should enable him to wreak vengeance on a tribe that had slain his brother, or some other close relative. This highly specialized point of view seems to have been absent from the mind of the Hidatsa pledger.

Of course, it would be strange if there were absolutely no cultural traces of the former relationship between Hidatsa and Crow. Even with our limited knowledge of Hidatsa customs it is possible to list some interesting points in common. Thus, the tribes coincide in the definition of the joking relationship, which obtains between *sons* of fellow-clansmen,¹ and in the modes of license permitted to the jokers. Dr Rivers has recently expressed the opinion that it is the social structure that constitutes the most stable element of culture. An examination of Crow and Hidatsa institutions leads to the query whether it is the large framework of social life, or not more frequently the minor social usage, such as the joking relationship, that is least likely to undergo change.

The quite recent history of several tribes I have visited seems to point in this direction. Among the Assiniboin it is no longer possible to get a clear insight into their former band (or clan?) system; but the parent-in-law taboo persists to the present day. In 1906 the Lemhi Shoshoni had lost most of their ancient life, but the custom of the menstrual hut was in full force. That social usages of the type mentioned may serve as sign-posts of a foreign cultural type is indicated by the absence of the mother-in-law taboo among the Arikara in spite of its presence among the Hidatsa and Mandan. As noted above, the influence of the Arikara on the neighboring tribes may have been considerable, and acculturation has certainly taken place in many directions; yet in this inconspicuous detail of everyday intercourse there is a sharp line of demarcation. Accordingly, it is obvious that the ethnologist must pay close attention to these minor social customs and must gather all related data. For example, in the case of so widespread a thing as the mother-in-law

¹ As stated before, descent is matrilineal.

taboo, it is necessary to inquire whether there are specific peculiarities—whether it is possible to disregard the rule after presenting the mother-in-law with a scalp, whether the words constituting her name are tabooed, whether the taboo disappears with the wife's death, and so forth. It is precisely such details that may help most in tracing historical connections. Whether, however, this holds generally or not, there can be no doubt that it holds for the two tribes compared. The Hidatsa and the Crows do not resemble each other in the conspicuous facts of either material, or social, or religious culture; they do resemble each other in certain minor traits that might be easily overlooked.

A third problem of some importance relates to the social organization of the Crows and Hidatsa. As already explained, these tribes have exogamous clans with maternal descent. The Mandan system, as given by Mr Curtis,¹ resembles that of the Hidatsa, but, as that author himself observes, it is possible that the information nowadays secured on this subject is unduly colored by Hidatsa influence. In practically all other Siouan tribes—certainly in all that could have influenced the Crow-Hidatsa sub-family in recent times—descent was traced through the father. Some Old World ethnologists might be tempted to suppose that the Crows and Hidatsa, like the Biloxi and Tutelo, have preserved a primeval condition of female descent, while all the other members of the Siouan stock have progressed to patrilineal descent. However, there is probably no American ethnologist that would seriously discuss such an hypothesis. It would be more to the purpose to cast about for some geographically contiguous tribe of alien stock from which the feature in question might have been derived. Here, however, we are doomed to disappointment. Of the Western Algonkin, the Arapaho had no clans or gentes; the Gros Ventres had gentes with paternal descent; while among the Blackfoot the preponderance of evidence is to the effect that their bands were non-exogamous as such, and that descent was reckoned in the father's line. The nature of the Cheyenne camp-circle division is a matter of dispute, but a direct influence from this tribe seems highly improbable.

¹ *The North American Indian*, vol. V, p. 345.

We are thus reduced to the Caddoan group; it might be supposed that the Arikara introduced the institution of maternal descent among their new neighbors of the upper Missouri. However, we find that neither the Skidi Pawnee nor the Arikara had anything like the Hidatsa system. The Arikara had no exogamous groups, and band membership was inherited in the male line;¹ and the Skidi had an endogamous village grouping with male descent.² We may conclude that the system of exogamous groups with matrilineal descent is a Crow-Hidatsa peculiarity. At the same time we must remember that the resemblance between the social organization of these two tribes is limited to this one rather general feature. Indeed, the common possession of this single feature gains significance only through its absence in other tribes.

An unsolved problem in the sociology of the Crows and Hidatsa is the function of the larger social units in which the clans are grouped. As stated above, I could get no evidence to show that the Four-Clan and Three-Clan divisions of the Hidatsa were exogamous. Among the Crows the testimony of different informants proved contradictory, some asserting that marriage was quite proper within one of the larger divisions provided there was no violation of the clan-exogamy rule, while others stated that the clan-groups were as exogamous as the single clans. It seems doubtful whether the question can be satisfactorily settled for the Hidatsa at this late day, but among the Crows an objective study of all the marriages that have taken place between middle-aged people now living, together with those of their parents, may shed light on the exogamous or non-exogamous character of these groups. The fact that the larger groups have no names is significant, but cannot be considered as more than presumptive evidence against the hypothesis of exogamy.

Finally, a few words may be devoted to the problem of the age and military societies. The questions connected with this subject are partly of a psychological and partly of an historical

¹ Curtiss, *loc. cit.*, pp. 61, 149.

² G. A. Dorsey, Social Organization of the Skidi Pawnee, *Congrès International des Américanistes*, XV^e session, II, p. 70.

character. Psychologically, the principal point of interest is whether the ostensible gradation by age that has been found among the Mandan and Hidatsa is really at bottom a classification by age. For reasons stated at length several years ago¹ I regarded this as improbable even before visiting the tribes. Recent investigation in the field shows that the age grading is a by-product of the mode of purchase. The subjective attitude of the natives is that a man holds membership in every society that he has ever bought and has never sold. Thus a man of ninety may still belong to—or rather own membership in—a society purchased at twenty. In other words, the fundamental correlation is not between age and membership in a certain organization, but between purchase and membership. The age element enters through the custom that all age-mates purchased a society at the same time, which custom naturally leads to a more and more refined classification by age as the number of purchasable societies increases.

Another question is, whether the age societies of the tribes mentioned, as well as the ungraded societies of their neighbors, should be considered as religious organizations. For the Crows, this question must be unhesitatingly answered in the negative. The military organizations of the Crows were, apart from their military character, essentially social associations similar to four organizations of the present day, which join in the performance of the Grass dance on certain occasions and otherwise have the functions of clubs and mutual benefit brotherhoods. The Hidatsa and Mandan age societies had a number of religious traits; several of the regalia seem to have been invested with a sacred character, and there is a considerable proportion of origin myths based on supernatural revelation. Nevertheless—and this also applies to the corresponding ungraded societies of the Arikara—there is a very clear distinction between the attitude of these Indians toward all of the aforementioned organizations and their attitude toward the really esoteric medicine-bundle organizations. The most conservative natives willingly discuss the military societies, while only the christianized

¹ The Assiniboine, *Anthropological Papers of the American Museum of Natural History*, IV, pp. 75-98.

Indians consent to speak of the more sacred organizations of the second class. Essentially, then, none of the military societies can be viewed as a full-fledged religious association.

The age grading of the Hidatsa and Mandan women's societies rests on the same principle as that of the men. Two of them, the Goose Women and the Buffalo Women societies, are of a rather more religious character than any in the men's series, and had for their function the insurance of a sufficient supply of corn and buffalo respectively. Schurtz's conjecture that the Arikara also had women's societies is confirmed by an informant, the organizations bearing the names of the Goose and the River Snake.

The historical questions that develop from a study of this subject are numerous, and cannot be readily solved except in principle. As I have shown in the paper referred to above, the question how and where the *system* of grading and purchase originated must be considered apart from the development and spread of ceremonial activity or regalia, and must also be treated as distinct from the question of the tribal functions of societies. For a satisfactory investigation of these historical questions it is necessary to consider the societies of all the Plains tribes. Then we discover that any one society is best characterized as a complex of features that are not necessarily connected in that particular way. Certain functions, such as police activity, and certain emblems, such as a stick wrapped with otter skin, are very widely diffused over the area, but they may appear in rather different combinations. Thus, the police functions may either devolve, not on any society, but on gentes, as among the Osage; or they may be associated in turn with all of the military societies, as among the Crows; or they may be vested in one particular society, as among the Mandan and Hidatsa. Similarly, a stick wrapped with otter skin occurs in the Mandan Soldier society, the Crow Kit-Fox organization, and various societies of other tribes. When, therefore, we find among the Mandan a society that has two otter-skin sticks and at the same time exercises police authority, we shall not regard this as proof that there is a necessary connection between these two features, but merely as a secondary association. Of course we must guard against the error

of supposing that all traits that are logically distinct must also have been historically distinct at one time. For example, no logical reason can be given why the bearing of an otter-skin stick should be connected with the duty of not retreating from the enemy; but since these two *logical* elements are, as a matter of fact, always joined, we may reasonably assume that their union is historically primary.

The course of development, however, has certainly been in large measure the result of secondary association. The fundamental fact is the tendency throughout the area toward forming societies of some sort, and the development of the several tribal systems of coordinating or subordinating the societies within any one tribe. Secondly, we have the very extensive occurrence of borrowing and its effect on the character of the established systems and their constituent societies. When a definite system has been established, there is a tendency to fit every society into it, even regardless of its function and ceremonial character. Thus, among the Arapaho the fifth and sixth societies bear no resemblance to the lower organizations of the same series. Similarly, the lower members of the women's series among the Hidatsa and Mandan seem to bear no relation to the Goose and Buffalo societies except for the mode of purchase and the fact that each has its relative grading. That such societies are linked together may be regarded as a case of secondary association even if we suppose that the single societies all originated among the same people. The clearest illustrations of this process, however, occur where we have demonstration of borrowing. Thus, a comparison of the systems of the Arapaho and the closely related Gros Ventres reveals far-reaching similarities, but there are several differences, among them the presence in the Gros Ventre series of a Fly dance, which is absent from the Arapaho series. This Fly dance does occur, however, among the Blackfeet, where Prince Maximilian discovered it in 1833. Since the Gros Ventres are known to have been in close contact with this tribe and since the dance has not been recorded anywhere else,¹ the Gros Ventres must

¹ Dr Goddard tells me that the Sarcee had the dance, but its introduction is also due to the Blackfeet.

be supposed to have adopted it from the Blackfeet, especially as the Fly dancers occupy exactly the same position in the two series. It is obvious however, that the introduction of a new society in this way alters the grading, and may even cause more serious displacements, of the other members of the series. In the instance just cited both the borrowing and the receiving tribe had a graded series. In other instances societies must have been borrowed by tribes with a graded series from tribes without the graded system, or *vice versa*. Thus, the Dog society occurs in the graded series of the Arapaho, Gros Ventres, Blackfeet, Hidatsa, and Mandan, and also among the ungraded societies of the Cheyenne and Crows. In such cases we must be careful to determine precisely what has been borrowed. For example, the Crows state that their Dog society was derived from the Hidatsa. Now, the Dogs formed one of the highest societies in the Hidatsa series, but as the Crows did not grade their organizations, this feature could not persist among them. Further, the officers of the Hidatsa Dogs might approach the meat-rack of the Goose Women and appropriate the best slices for themselves. This highly characteristic privilege likewise could not be introduced among the Crows, as there were no women's organizations among them. More important than this feature is the mode of entrance. As the Hidatsa method was foreign to the Crows, the Dog society among them was simply entered in the same way as their other military societies, without formal purchase or adoption. On the other hand, the Hidatsa Dogs had nothing to do with police duties, for these were vested in their Blackmouth society. But among the Crows the military societies took turns at policing the tribe, and accordingly the Dogs sometimes acted in this capacity. Summing up, we may say that in the Crow tribe the Dog organization is indeed translated: the borrowed ceremonial elements, still summed up under the old name, have received a specifically Crow stamp.

The illustration just given shows the secondary association of a borrowed ceremonial complex when adapted to a pre-existing tribal system. Single ceremonial elements, such as dewclaw rattles, may of course be adopted without requiring any special adaptation. Nevertheless, an analogous process may occur even in their case.

When an emblem has become the possession of one society in a tribe, it may be adopted by other societies. Thus, among the Crows two societies not merely different but antagonistic have identically the same straight and hooked sticks wrapped with otter skins, and other societies share the same type of officer's sash. Indeed, the origin of such a thing as a definite scheme, whether of purchase or anything else, becomes intelligible as the result of similar patterning on a single model that may have been in the first place produced by some historical accident. To return to the single ceremonial elements, it appears that they are often very mobile and may become associated with all sorts of complexes. This applies, for example, to the custom of expressing the opposite of one's meaning, which is sometimes coupled with obligatory foolhardiness, in other cases with a fire-dance and various ceremonial performances.

A student of the societies of this area must accordingly seek to determine both the specific tribal peculiarities with regard to the organization of societies and the precise extent to which borrowing has taken place. It is obvious that the sum total of features characterizing any one society will often embrace some that are not reducible to this formula because new features may be added from time to time without being borrowed, and representing individual additions rather than tribal peculiarities. However, the merging of alien elements into the native complexes covers a very large area of the field, and continued investigation from this point of view will doubtless prove fruitful.

AMERICAN MUSEUM OF NATURAL HISTORY
NEW YORK CITY

ABORIGINAL REMAINS IN THE CHAMPLAIN VALLEY

THIRD PAPER

By G. H. PERKINS

IN the two papers preceding this¹ the writer has attempted to describe and figure many of the most characteristic objects that have been found and preserved in the region usually included in the Champlain valley. Here, as elsewhere, some extremely valuable articles, notably those of earthenware, have been lost or destroyed by ignorant finders, but there has been some advantage in this ignorance, for, because few have understood the value of the strange objects which have been exposed by plow or spade, there has been no attempt at deception in regard to them, and I do not think that the manufacture of "Indian relics" has ever been undertaken in this region. Hence we may feel quite sure that all the objects in our collections from the Champlain valley are what they are represented to be.

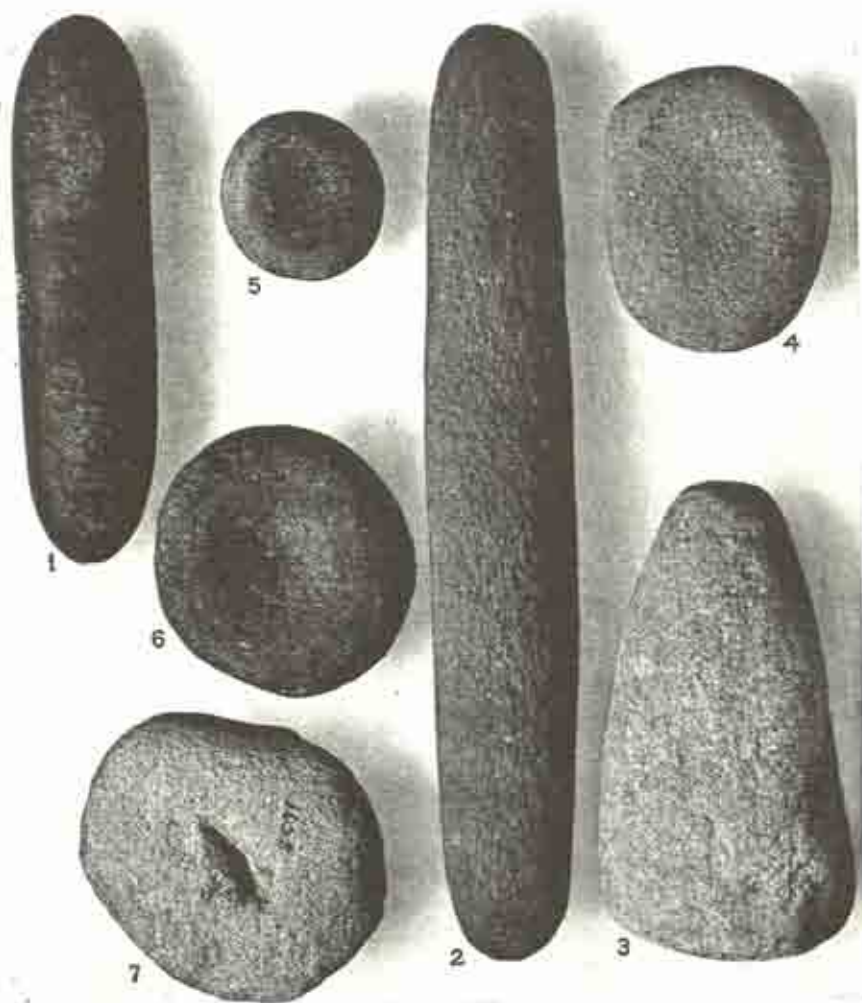
Probably because of the meeting in this valley of Algonkin and Iroquois and the occupancy of now one site and then another by families of one or the other of these peoples, we find considerable variety in the stone and other objects found.

Besides the specimens mentioned in the former papers there remain several kinds which should be added to the list, or it will be quite incomplete. As will be seen, some of the implements to be noticed are among the most conspicuous in our collections.

HAMMER-STONES AND PESTLES

Hammer or pounding stones are more abundant in this region than any other class of objects except those chipped from quartzite, although much less widely distributed than the latter. Naturally, implements used in pounding would be largely confined to camp or village sites where a stay of some duration was made. In a

¹ *American Anthropologist*, N. S., vol. XI, 607; vol. XIII, p. 239.



STONE IMPLEMENTS FROM THE CHAMPLAIN VALLEY
[One-half size.]

region strewn by drift furnishing bowlders of all sizes and of hard material, these would supply the need for such implements as those named. No artificial shaping could improve the form of many of the drift stones, and, while pounders were not infrequently made from small blocks of quartz or similar stone which were chipped or flaked, by far the greater number were simply the drift pebbles worked very little or not at all. They are of all sizes and weights, from a few ounces to several pounds. It is noticeable that while the flaked specimens are nearly or quite spherical, those pebbles used as hammers are more often oval and flattened on two sides. Most of these, as in other localities, are marked as hammers only, but conclusively such by the abrasion of the ends.

While there would seem to be no necessity for putting work into an article that could be picked up ready made, we do find now and then specimens that are worked all over.

Pl. 1, 4, 6, and pl. 11, 17, show some of the rudest specimens, as does pl. 11, 18, though the last seems less rude, as the quartz pebbles used were very smooth and regular when taken. From these wholly unworked pounders we find in the same locality various grades to those like pl. 11, 6, which are not only smoothed over the whole surface, but cupped on each side in order to insure a firmer hold. Few of our pounders are as small as that shown in pl. 11, 18, but occasionally such little specimens—only three inches long and of small weight—are found. Stones similar in form to that shown in fig. 6 are found which bear no mark of abrasion and which may well have served as small mortars. Whatever their use, these cupped stones are always carefully made. From the simplest forms, like that of pl. 1, 4, there may be found in our collections a regular series until we have the larger pounders like that shown in fig. 3, and the one more carefully finished in pl. 11, 13, and finally those grooved for the attachment of a handle as in pl. 11, 15.

As may be noticed, the last form is very much like the meat pounders used until recently by the Dakota. These Indians attached a handle by means of a piece of rawhide, which covered the stick used and was carried about the groove in the stone. Evidently this rawhide was put on when wet and shrunk to a tight fit when

dry. It is possible this may have been the ancient method as well. While on the one hand the oval or globular hammer developed into the pounder, like pl. II, 15, the more cylindrical pebble like pl. II, 8, in which only the ends are worked, developed into the carefully wrought implement such as that shown by pl. I, 2. Long, cylindrical pebbles, such as pl. II, 8, are not common, and the long pestle was most often made from a bit of stone broken from a larger piece. Much labor must needs have been expended in fashioning such an angular fragment into the regular and well-finished specimen.

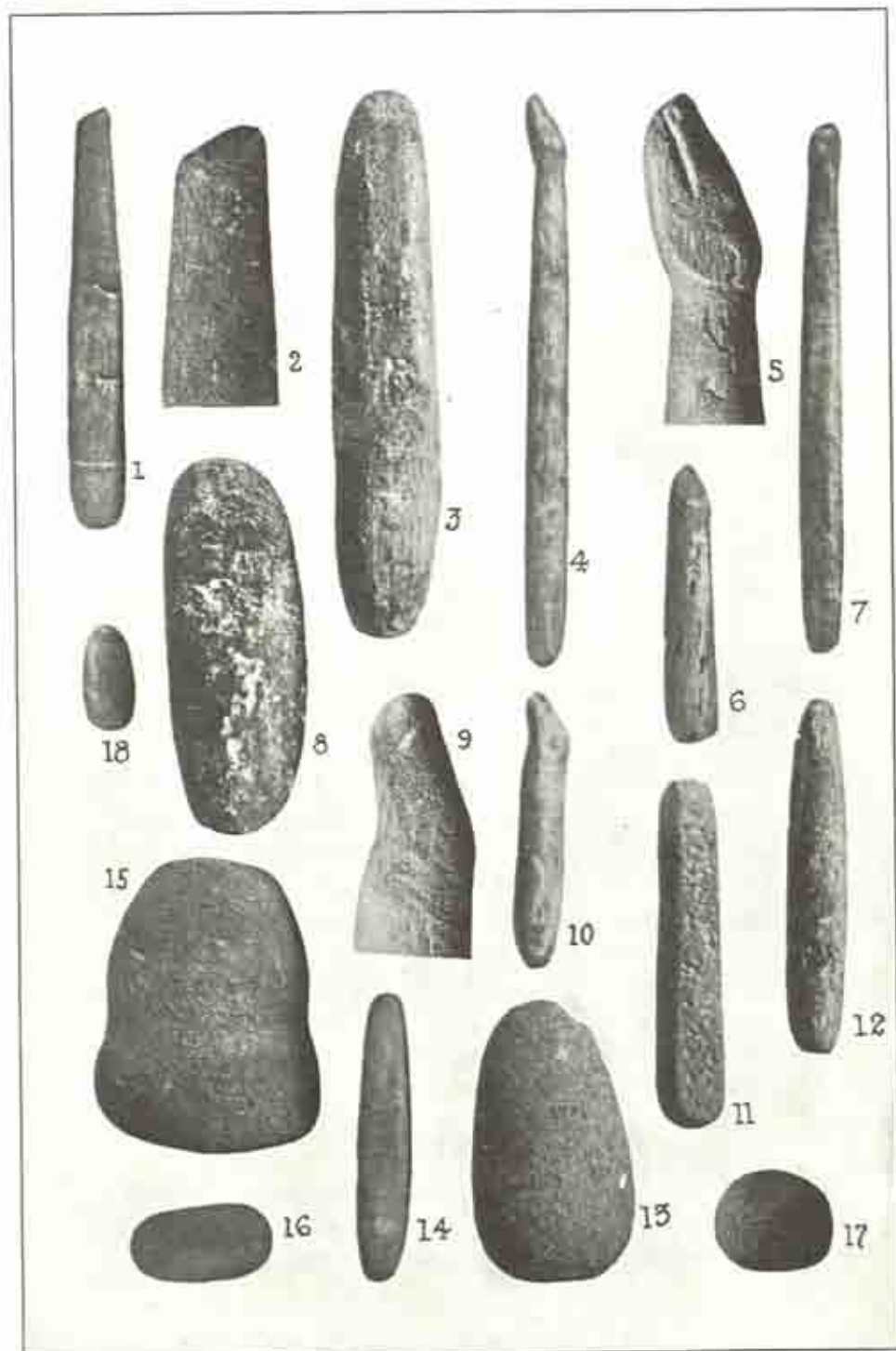
Pl. I, 1, 2, and pl. II, 3, 14, show examples of our ordinary pestles of the better sort. The material as well as the size of these pestles varies greatly, but necessarily only hard stone could be used. The average specimens are twelve to fifteen inches long and weigh from eight to ten pounds. The largest that have been found exceed two feet in length, and weigh twenty to twenty-seven pounds.

The pestle shown by pl. II, 11, is of hard limestone. Two sides are carefully smoothed, two left untouched as the prints of fossils show.

Pl. II, 1, 2, 4-7, 9, 10, are what have been called effigy pestles. They are all rounded at one end and carved in the likeness of animal heads at the other. It may be noted that the illustrations do not show the form of the head in all cases as well as might be desired. In the actual specimens the form of the head is often more distinct than in the figures given. For several reasons I am inclined to regard these as clubs rather than pestles. They are more slender and therefore more easily broken than the undoubted pestles; they are of softer material, and they show little sign of use.

Some, as pl. II, 4, 7, are very long. That shown in fig. 4, of light-green mica schist, is twenty-seven inches in length and nowhere more than two inches in diameter. Fig. 7 is nearly as long. The upper end of 4 is carved to represent a head shown better in fig. 5. This is the best specimen of this sort found; but a considerable number of others, more or less well done, have been recovered.

The difference in form, and also in other respects, between these Champlain valley pestles and those from the Mississippi valley or farther west will be apparent to anyone familiar with the western



PESTLES AND CLUBS FROM THE CHAMPLAIN VALLEY

(1, 4, 6, 2, 10, about one-ninth size; the other figures are one-third size)

forms. Pestles are not abundant in this region, and it is remarkable that this is true, for, when settled at least, each Indian family must have needed a mortar and its related pestle for the preparation of their daily food. When the size and durability of such implements as these are considered, it seems almost certain that if they really were as common as might be expected, many more of them would be found.

Among those specimens that at first sight appear to be allied with hammers are some forms not very common, but still not especially rare, which are very puzzling.

Pl. 1, 5, 7, are of this sort. The specimen shown in fig. 5 is much more carefully made than is usual in hammers. The illustration does not show fully the difference between such an object and that shown in fig. 6, but the smaller specimen is much more elaborately shaped and its surface is smoothed on every part. As in the case of fig. 5, these finer objects are smaller than the hammers. The upper and lower surfaces may be cupped, though not deeply, or flat, and the edges are evenly beveled, as is not too well shown in fig. 5, so that there is a sharp ridge about the middle. It seems more probable that these specimens were more closely allied to the discoidal or chungke stones than to hammers; that is, they were for use in playing games.

More problematical is the specimen shown in fig. 7 of pl. 1. Stones of this sort occur of various sizes: some are quite large, few smaller than fig. 7, which exceeds three inches in its long diameter, being shown about half its full size. Some of these are quite rude, others, as in the figure, are more or less smoothed over the entire surface. The material is usually hard and gritty, and the hollow is of the form seen in the figure.

It would seem most likely that such stones were used in sharpening bone awls, or some such instruments, or at first in shaping the points.

BOILING STONES

Stones precisely like the hammer-stones in form are frequently found in the same localities, that is about any camp site. Obviously, the same drift pebbles were selected for use as hammers or

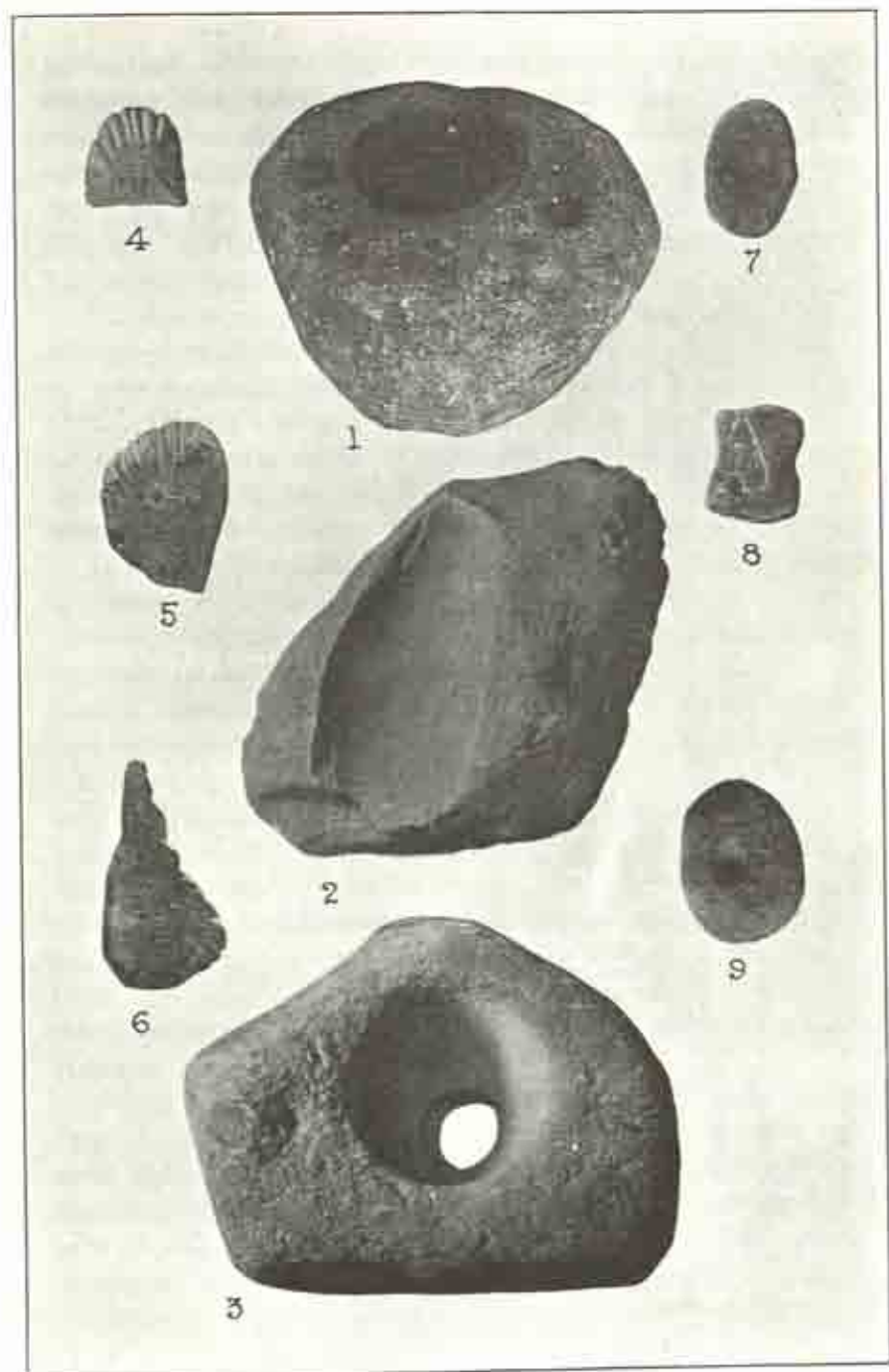
to be heated and put into pots of water in order to cook whatever might be needed. As was shown in the first of these articles, nearly all the vessels used by the aborigines were of earthenware, and these were for the greater part too fragile to endure long suspension over the camp-fire. As is well known, cooking was accomplished in such pots, without placing them over the fire, by putting hot stones into the water they contained. The abraded ends mark the hammer, and the reddened and cracked surface marks the boiling stone. None of these are as large as the largest pounders, and they are more uniform in size. Of course similar stones that chanced to be about the fire would show the same signs, though not used.

MORTARS

As has been intimated in speaking of pestles, mortars are not at all abundant in the Champlain valley. This is difficult to explain, for if any of the implements and utensils of the aborigines were to endure and be easily found in later times, none would appear to be so likely to exist intact to the present time as these. Nevertheless, I have seen not more than a dozen or so. Some of the larger mortars, either whole or broken, were used in building stone walls as any suitably sized stones would be used, but this can account for only a small number.

Pl. III shows three of the best of our mortars. As in case of these, each specimen is in some respects unlike any others. Of the three figures, 1 and 3 are shown about one-fifth full size, and fig. 2 one-ninth. The latter is one of the largest that has been found here. All exhibit the result of much labor, not merely in the excavation but also in shaping and smoothing the whole surface.

Fig. 1 of the plate was made from a small boulder of reddish granite that was found in the drift. Whether its form is as found, or more or less hammered to its present shape, cannot be determined with certainty, but in portions of its surface it has evidently been rubbed artificially and the entire surface is smooth as if water-worn; but of course this would be the case in any drift rock. The cavity shown is very well shaped; it is five inches in diameter and two and a half deep. On the opposite side of the stone is a similar



MORTARS, ETC., CHAMPLAIN VALLEY

(1 and 3 about one-fifth size; 2 about one-tenth size; the others one-fourth)

cavity, but somewhat larger than that shown. What particular advantage there was in having a hollow on both sides of the stone, when only one could be used at a time, is not evident. Another noticeable feature is seen in the small cup-like cavity on each side of the large one. Stones like that seen in fig. 9, in which there is only one small cavity, are not uncommon. To these reference will be made later.

Fig. 2 shows one of our largest mortars. It was shaped from a large piece of flat stone, as seen in the figure. The material is gray quartzite; the greatest length of the object is 27 inches, width 17, and thickness 4 to $5\frac{1}{2}$. The unusual form of the excavation makes this mortar a connecting link between the regular mortar and the flat metate. This cavity is 15×10 inches, and where deepest it is 4 inches. The weight approximates fifty pounds.

In fig. 3 is shown another form, fashioned from a large piece of greenish sandstone, much like that from which ordinary grindstones are made. As the figure shows, the cavity is deep and regular, and has no bottom. Apparently after the side shown was finished, some one, either carelessly or because the stone was turned down on the side seen, began to make a cavity on the opposite side, breaking through into that already made. The surface has been rubbed and somewhat shaped. This mortar is 14 inches long and 9 inches wide. The greatest thickness is $3\frac{1}{2}$ inches. The cavity seen is 5 inches in diameter. A small depression at the left of the large cavity will be noticed. In this specimen, besides the shallow excavation on the side not shown, which broke into the completed one, there is another at the left end of the mass, which, though not very deep, has about the same diameter as that shown.

Stones or bits of ledges, which bear only small cavities like those at the sides of the larger ones, or the cavity shown in the small stone in pl. III, fig. 9, are not uncommon. Sometimes a flattish piece of stone, five or six inches in diameter, has only one, or it may be two or three, of these little cups or cavities an inch or so across and usually but a fraction of an inch deep.

SINKERS

Pl. III, figs. 7, 8, show two examples of objects common in certain localities, but not widely distributed. They occur near lakes or large ponds, but nowhere else. The usual supposition that they were used for sinkers attached to nets or large lines seems most probable. They are generally merely flat bits of stone or flat pebbles notched on each side, but with little other evidence of having been worked. They are three or four inches long. Occasionally is found one of these sinkers that is more carefully made and is smoothed over the whole surface.

SINEW STONES

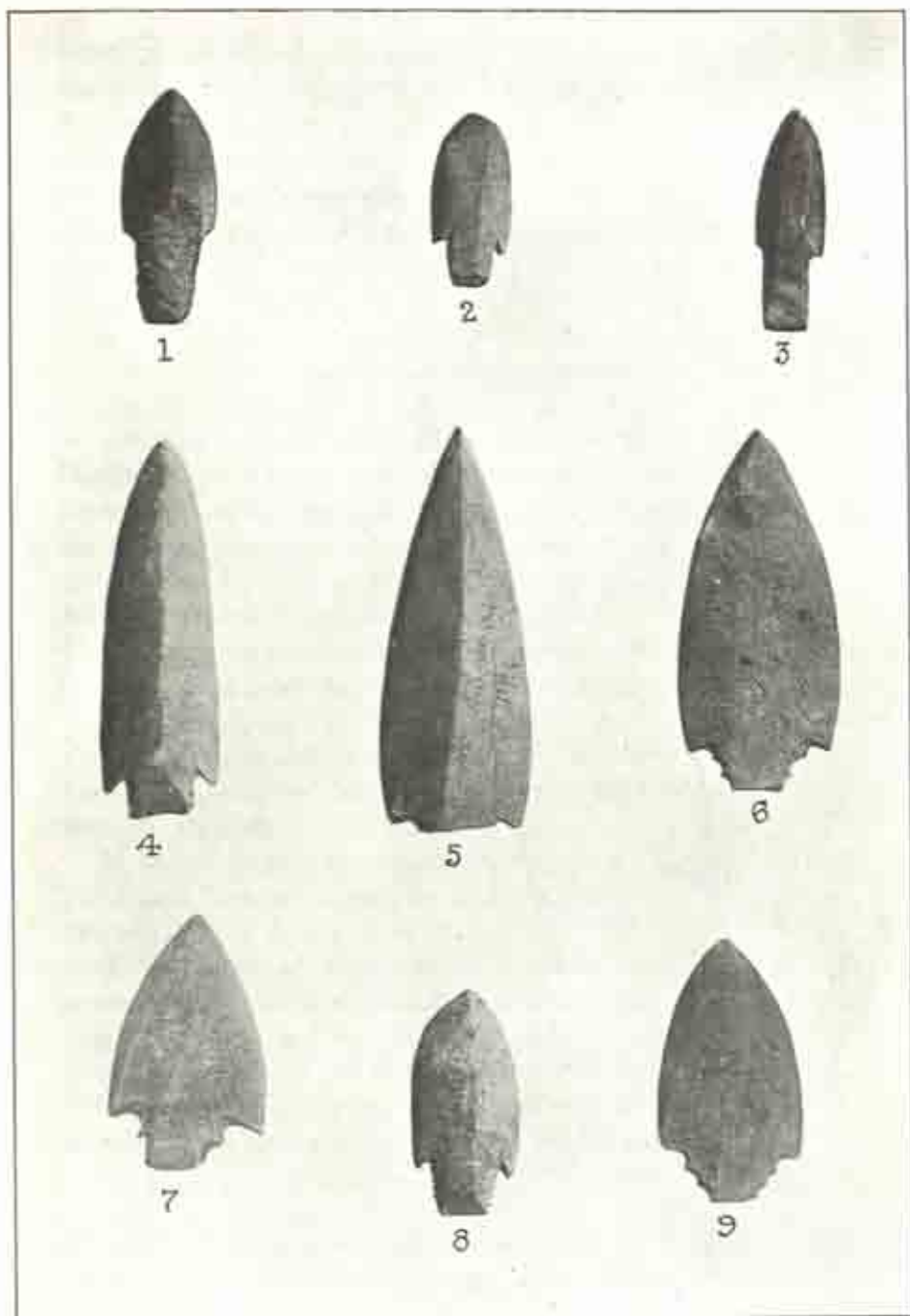
Pl. III, 4, 5, 6, illustrate peculiar grooved stones such as those which in other localities have been called "sinew stones," designed for use in preparing cord from sinews of animals. They are of hard, compact material, and are generally well made, though there is no attempt at ornament. All of our specimens are flat and at one end always rounded, as seen in the figures. Such objects are not very uncommon in the Champlain valley.

OBJECTS OF SLATE

In the first of this series of articles slate knives and points are mentioned, and four of them are figured on one of the plates. At that time there was no intention of considering these implements further, or the whole matter would have been left for the present paper, so that all might have been considered together. On looking over our collections, so many of these slate knives, etc., have been noticed that it seems worth while to give them more extended notice. The specimens first figured¹ are similar but not the same as those shown on pl. IV and V.

While these slate knives are by no means confined to the Champlain valley, but are found north in Canada, west in New York, and, rarely, in Maine, they are yet among our most characteristic specimens, and are probably more abundant and varied here than elsewhere. With some exceptions these implements are always

¹ *American Anthropologist*, N. S., vol. XI, pl. xxix.



SLATE KNIVES, CHAMPLAIN VALLEY
(One-half size)

hafted, often barbed, and usually notched along each side of the shank or haft. The figures on pls. iv and v illustrate a fairly full series of the different forms that have been found. They are almost always regular in shape and smoothly finished. The variously colored slate—red, purple, or drab—from which they are made is found abundantly in place in western Vermont and adjacent parts of New York, and is also not infrequently found in the drift along the shore of Lake Champlain, having been carried northward by the ice and currents of the lake.

There have been found a few specimens that seem to have been only partly completed, and thus show that the bit of stone, ordinary roofing slate, was chipped into some semblance of the desired form and then rubbed with sand until smooth and in some cases polished. Usually the work was very well done; indeed none of the ordinary implements are so nicely shaped and smoothed as these. The edges are usually sharp; but in some specimens they are rounded, and apparently were never fitted for cutting.

The resemblance of these objects to some of the Eskimo knives has long since been noticed by various authors. Indeed, some have found sufficient similarity to suggest the idea that at some time there was an Eskimo migration or at least a visit to this region. Few will, I think, find convincing evidence of this in the presence of these slate knives.

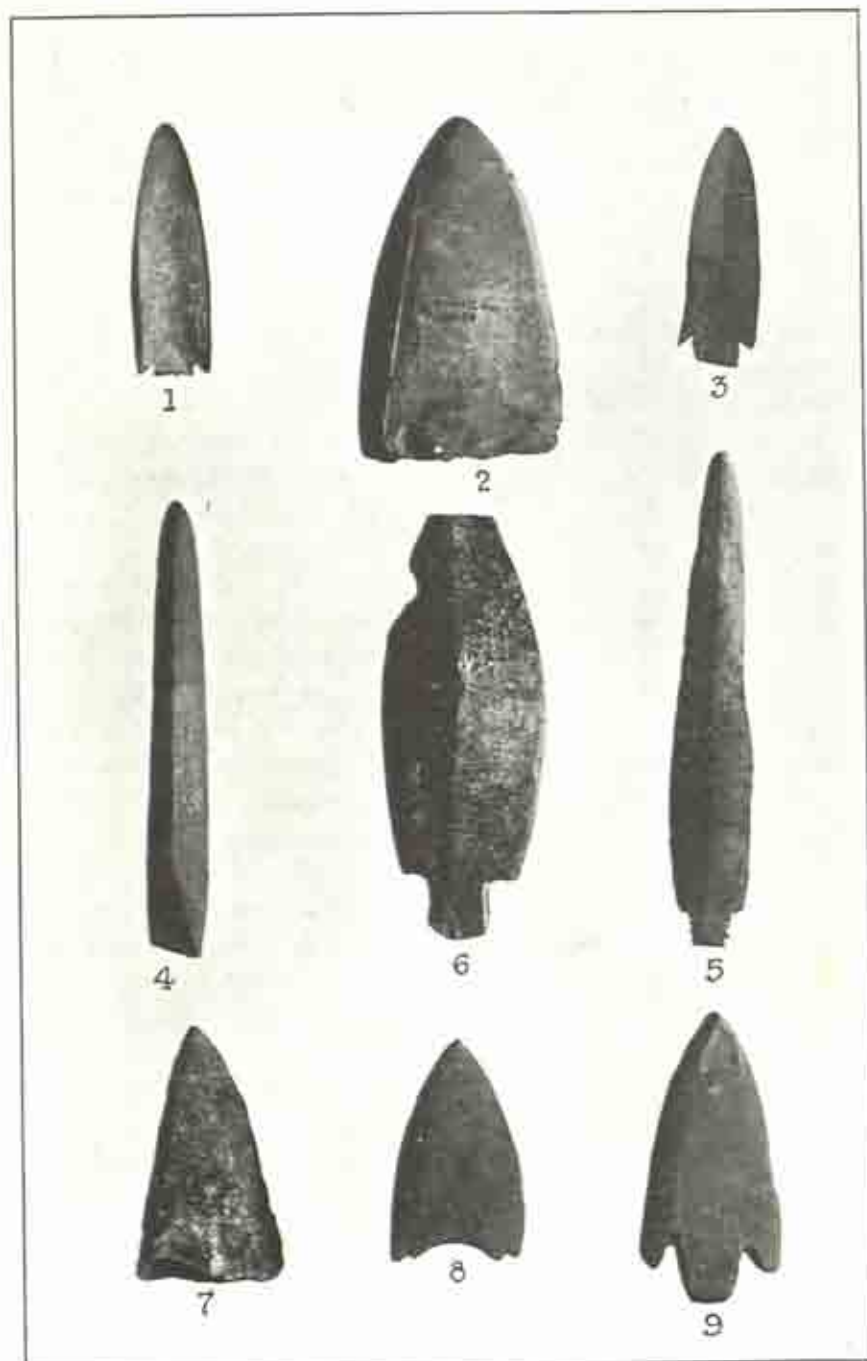
It seems difficult to understand how many of these objects could have been serviceable as knives, though the form suggests this implement, for the material is too soft and fragile to endure hard use. Most of the specimens shown half-size on pl. iv are strong enough to have served as knives. The notched stems mentioned above can be readily seen in figs. 7, 8, and 9, and less distinctly in some of the others. As shown, some of the notches are large and few, others smaller and more numerous. Occasionally, as in fig. 3, the stem is not notched, but this is exceptional.

On pl. v, 1-7 (shown one-third size) are illustrated our largest examples of this kind. Such implements as that represented in fig. 2 of this plate may well have served as skin-dressers or for use in making pottery, but, like most of the rest, they are not hard

enough for wood-working, and still less for working stone. The specimen shown in fig. 4 is one of the most perfectly finished that has been found; it is not only regular in shape, but finely polished. It is eight inches long and nowhere more than an inch wide. It has no haft, nor does it show any sign of use. The material is light-green slate. More slender is the specimen shown in fig. 5, which has suffered from exposure, but was probably as well finished originally as that illustrated in fig. 4. It is nine inches long, and at the widest part an inch and a half, though most of the blade is narrow. It is quite thin, and certainly could not have endured other than careful usage. As seen, there is a small haft, not very deeply notched, along the sides. Both of these objects may possibly be regarded as daggers, but it is not probable that either could have been used more than once. The implement shown in fig. 8 is peculiar, not only in the absence of a stem, but in the smoothly rounded lower edge. This, as well as fig. 9, is one-half size.

The specimen shown in fig. 6 is the only one of its kind that I have seen. The original form of the upper end is doubtful, as it is broken, but apparently it was pointed. It is figured more nearly full-size than the other specimens, being $3\frac{1}{2}$ inches long and $3\frac{1}{2}$ wide. Of course when complete it was somewhat longer—about 5 inches long, I should judge. The material is a light drab slate.

UNIVERSITY OF VERMONT
BURLINGTON, VERMONT



SLATE KNIVES, ETC. FROM THE CHAMPLAIN VALLEY

(4 to 7 one-third size; 8 and 9 one-half size).

LUCAYAN REMAINS ON THE CAICOS ISLANDS

By THEODOOR DE BOOY

INTRODUCTION

THE Caicos islands, originally a part of the Bahamas and governed from Nassau, but now having a more independent system of government under the supervision of the Governor of Jamaica, consist of a group of islands situated about lat. 22° – 21° N. and long. $71^{\circ} 30'$ – $72^{\circ} 30'$ W. (see map, fig. 1).¹ The islands are formed of the soft coral limestone common to these regions, and consist of four large cays, four or five of medium size, and a great number of smaller ones ranging in size from one hundred square feet to a mile square. With the exception of the Seal cays, bordering the Caicos Bank on the south side, and French cay on the western limit of the bank, I have been able to find conclusive evidence of pre-Columbian habitation on a majority of the islands: some of the smaller cays of course not being included in this general statement.

Outside of a settlement called Kew, on Grand Caicos, where one can find trees (tamarind and madeira) up to about fifteen inches in diameter, the vegetation on the Caicos islands is extremely small. The coppices never exceed ten feet, and usually are not more than six feet high, and, as throughout the Bahamas, cacti form the prevailing undergrowth. Of this latter variety of the Caicos flora I have occasion to speak feelingly, as one day, while about to pick up a fragment of Lucayan pottery, I fell into a "prickly pear" and it took me the better part of a day to extract the spines. The negro inhabitants grow a little corn on their clearings, and this, together with sweet potatoes and yams, affords their principal food supply. Need I say that the destitution, want, and squalor on some of the islands are beyond imagination?

In spite of the poverty nowadays, one can still see the remains

¹ Geographically speaking, the Caicos and the Turks islands are always included in the Bahamas.

of former greatness in many places. Before the liberation of the slaves throughout the British West Indies in, I believe, 1838, several large and rich cotton plantations were in existence on these islands. From all accounts (and a negro has a very good memory when it comes to traditions that are handed down to him by his father or

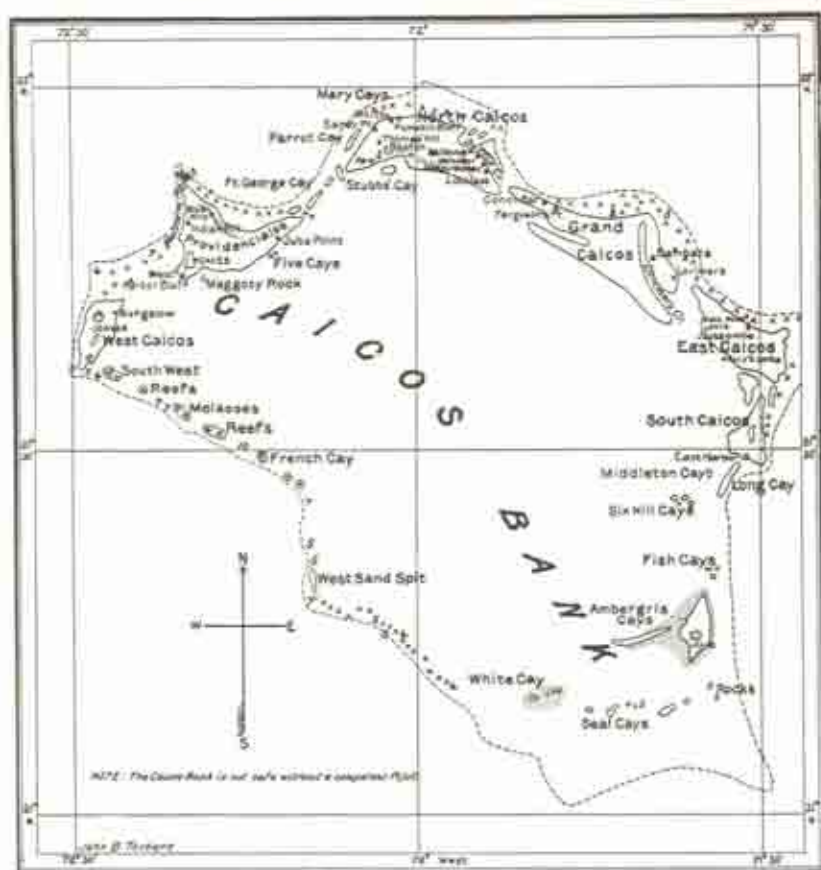


FIG. 1.—Map of Calicos Bank.

grandfather) some of the plantations on Grand Caicos had as many as seven hundred slaves, and I have seen slave quarters, built of solid stone masonry, that could accommodate fully half this number. As mention will be made of the plantations more than once in these pages, I shall not now enlarge on the subject.

At one time the northern side of the Caicos group was a favorite resort for pirates and freebooters. Evidence is not wanting that the various inlets dividing the cays were much deeper in those days, allowing a vessel of twelve-foot draft to pass through them, the small creeks making excellent drydocks in which to overhaul and calk the piratical craft. On the former McIntosh plantation at Bellevue, on Grand Caicos, I came across some fortified terraces overlooking the Lorimer inlet, which, report said, served the purpose of defending the planters in case a landing was planned by the dreaded pirates. One can talk to a Caicos negro for hardly half an hour without hearing some reference made to buried treasure, of which the blacks always seem to know the whereabouts, but which they never attempt to excavate.

A few words may not be amiss about the Caicos Bank. The boundaries of the islands on the bank side, as shown on the charts, are extremely inaccurate, only the general outline of the group being given the true position. This probably is owing to the lack of deep water on the bank proper, which makes it of no interest to the mariner. Inter-island navigation is extremely puzzling, and should never be attempted without the guidance of some competent local pilot: at that, it is not safe to sail by night, as the Caicos Bank has many dangerous shoals which cannot be observed until one is almost on top of them. In going from cay to cay on the northern side (if one has a staunch craft) it is far better to stand outside the reef in good weather, as this does away with the possibility of grounding one's vessel in shoal water and having to wait eight hours for the tide to get released.

Plug tobacco (purchased at the stores on South Caicos) will be found an excellent medium for purchase and barter throughout the cays. I have been able to purchase foodstuffs, curios, the services of laborers and guides, etc., far better with a few plugs of tobacco and some pennies, than I could have done with money of large denomination.

THE ANCIENT INHABITANTS

When Columbus first set foot within the New World, it was upon one of the Bahama islands, called Guanahané by the natives whom

he found there. This island Columbus named San Salvador, and it is still known by this name and also by the name Watlings island on British charts. Columbus afterward proceeded to Little and Large Exuma, and on all these visits his accounts of the natives (or Indians as he called them) are the same. Although these people, from all accounts, called themselves Ciboneys, they later received the name "Lucayans," and, as they are generally thus designated, I shall employ the same term.

From the accounts Columbus gave, the Lucayans appeared to be a gentle, peaceable race, unskilled in warfare, possessing no offensive weapons, and of an extremely tractable disposition. They treated Columbus and his followers with the utmost respect and deference, showed as much hospitality as they were able, and did their utmost to welcome the "visitors from Heaven," as they fondly imagined the white men to be.

It is evident that the Lucayans were mostly agriculturists. Acosta, in his history of the Indies, mentions the fact that the Lucayans made cassava bread from both the poisonous and the non-poisonous variety of the yucca, which were cultivated in the fields; and this bread, together with iguanas, fish, and fruit, formed their principal diet. Whether or not in those days large animals existed on these islands is a matter for conjecture: the fact remains that, outside of cattle, swine, horses, and donkeys which have been introduced on the Bahamas by white men, no indigenous mammals now exist, and did not exist in pre-Columbian times, with the exception of a species of dog that never barked and a kind of coney, or rabbit, called *utia* by the natives. And still, I have found more than one vertebra of some large mammal amongst Lucayan material in caves, and also the fang of a boar, which probably had been used for incising pottery, of which mention will be made later. Now, whether or not these bones were brought by the Lucayans from other regions to the Bahamas is a problem I can not solve. Outside of the cultivation of yucca and fruit, the natives also must have grown cotton, as is evident from the fact that Columbus in his diary mentions their bringing balls of cotton for barter and that this seemed to be their most valued possession. Also

they made their "hamackas" (hammocks) of cotton, and it would seem that for this latter invention alone the Lucayans have a claim on posterity.

It was erroneously supposed by Columbus that the Lucayans made a practice of anthropophagy, because, on exploring the huts in which the natives lived, his sailors found dried human remains, such as arms and legs. It was later proved that these were kept from reverential motives and belonged to the ancestors of the occupant of the hut.

The Lucayans were a very cleanly people, taking a swim after each meal, which practice apparently did not produce any ill effect. Also their houses were kept in a remarkable state of cleanliness.

From the skeletal remains that have been found in various parts of the Bahamas, it appears that the Lucayans were of normal height and development, excepting the skull, which, like that of the Flathead Indians of our Northwest, the Aymara of Lake Titicaca, and some other tribes, was artificially flattened in infancy, giving the forehead a very broad appearance. Columbus notes this peculiarity in his diary, and I have observed that this sloping forehead is depicted on the small heads belonging to the rims of earthenware bowls which I have found. Columbus also makes special mention of the handsome appearance of both the men and the women: their skin was copper-colored and their features were extremely regular. The Lucayans were wont to go about naked, the men wearing a headdress of feathers, and some of the women occasionally wearing a small mantle of cotton fiber. It also seemed to be customary for the men to paint their faces to a slight extent.

The dwellings were constructed of branches of trees and interwoven palm leaves, and were built upon some sort of foundation made of coral rock. I have found many of these foundations on the islands. The earth with which they must have been covered has of course disappeared, but I could still find the fragments of pottery and other utensils in great abundance among the stones.

The Lucayans were governed by caciques, who, it seems, were elected by the different tribes, a person being chosen who was exceptionally proficient in feats of strength and endurance. Al-

though this office was not hereditary, the cacique frequently managed to secure the election of one of his sons when he himself became too old to hold office. While monogamy was practised by the Lucayans and their standard of morality was of a fairly high order, the cacique as a rule had several wives, probably owing to his position in the tribe. In this case, however, one of his wives was the principal, and the others appear to have been her helpers more than anything else.

While it is difficult to state exactly what form of religion the Lucayans had, I believe it may safely be assumed that it was the same as that of the other Arawak tribes, some of which still survive in British Guiana. These tribes believe in good and bad spirits; the latter, called *kenaimas*, being responsible for all evil influence, which the *peaiman*, the tribal priest and medicine-man, was instrumental in warding off. The Arawak also believe in a soul, which, they explain, flies away at the time of death, for then they can no longer see the reflection of a person in the pupil of the eye. The *zemes* were inferior deities, acting as messengers for the priests to the omnipotent being inhabiting the sky, in which the natives firmly believed. The caciques kept images of these *zemes* in their huts, and it was no unusual thing for the Lucayans to paint representations of these inferior deities on their bodies at certain festivals.

From the fragments of pottery which I have found, the Lucayans must have reached a high degree of proficiency in the ceramic art. Karl von den Steinen, the eminent German ethnologist, classes the Arawak tribes under the heading "potter-tribes," and this name is particularly appropriate to the Lucayans. Although none of the pottery that I have found is glazed, and none of it is ornamented with coloring, in general outline (and I can only conjecture the shapes, as I was not able to find other than fragmentary pieces) it must have been especially graceful, and the small heads, fastened to the rims of the vessels and probably serving as handles, show a clearness of outline and detail that compares favorably with more modern objects of art. Mention of these pottery fragments will be made later, and some of the illustrations give examples of incised and impressed ornamentation.

In addition to their high development in ceramics, the implements of the Lucayan people show graceful outlines, some of the jadeite chisels particularly being extremely symmetrical in shape. As builders of canoes, also, the Lucayans had few equals: some of these craft seated as many as a hundred people, and the fact that long trips were made in them proves conclusively that they were seaworthy. Another example of the artistic ability of this people is found in the carved stools of quadruped form used by the caciques, one of which is to be found in the United States National Museum at Washington. Navarrete makes mention of these in his *Primer Viage de Colon*.

I have found a great deal of evidence that the Lucayans inhabited many of the caves with which the Bahamas abound. I am inclined to believe that these caves were used primarily as places of worship and secondarily as shelters during hurricanes, and that it was not until the persecution by the Spaniards commenced that the Lucayans began to employ them as permanent abodes. Frequently the mouths of these caves are very hard to find, owing to the dense undergrowth, consequently they would make ideal places of refuge.

It is estimated that when Columbus discovered the Bahamas, the Lucayans numbered about forty thousand souls. Is it not shameful to contemplate that, a quarter of a century after these people first made the white visitors welcome to their islands, not one of them was left to speak of the change the Spanish rule had made in their former peaceful existence? Before dwelling on their extermination by the Spaniards, a few words will not be amiss regarding the origin of the Lucayans.

The Arawak previously mentioned are generally supposed to have come from the Matto Grosso region in the interior of Brazil. It is from this people that the Lucayans originated, after the parent group had migrated from Matto Grosso to the interior and the coast of British Guiana. While it is impossible to make any positive statement, I imagine that it was due to the constant persecution which the peaceful Arawak had to endure from the warlike Caribs that some of the tribes detached themselves and

gradually settled farther north on the Greater and the Lesser Antilles.¹ And even here it seems that they were not safe from oppression by the Caribs, but were forced to journey farther and farther northward until some of the tribes finally settled on the Bahama islands.² These then were afterward known as the Lucayans. It is hardly to be believed that this occupancy had been of long duration, for we find that at this time the Caribs were already taking possession of Haiti and waging fierce war on the Arawak tribes living on that island. What conclusion can be more obvious than that the Caribs soon would have crossed over to the more northerly islands in their canoes and have commenced the extermination of the Lucayans that was afterward completed by the Spaniards? And from the fact that the island of Haiti is far richer, more fertile, and better watered than the Bahamas, I believe that the Lucayans settled on the Bahamas only after the Caribs came to Haiti, which event can have been but a short time before the discovery by Columbus.

How the inhabitants fared after the Spaniards took possession of the West Indies is a matter of general knowledge. At first forced to pay a tribute or tax, afterward made to serve as laborers for a certain time, and finally kept in absolute bondage, a people accustomed to spend the greater part of their time in hammocks and working only when it was necessary to cultivate their scanty crops, would, as a matter of course, become speedily exterminated under the stern Spanish rule. The bondage was called the *encomienda*, "protection," which gave a certain number of laborers to each of the Spanish land owners for the cultivation of crops and the working of mines. Considering the average character of the outlaws who went to the New World, it cannot be wondered that this system was a source of abuses, and that the natives, living on the *repartimientos*, or allotments, granted to the followers of Columbus,

¹ The contemporary historians of the Columbian era inform us of the discovery of some islands in the West Indies on which the men and the women spoke different languages. The explanation is simple. The Caribs, having conquered the peaceful Arawak, killed the men and kept the women as captives. This would account for the two languages spoken.

² It is now known that some of the Arawak tribes not only navigated as far north as the Bahaman, but even landed and settled in Florida.

were made to work beyond the limits of their endurance. The Arawak tribes at the best were not long-lived: Im Thurn states¹ that he never came across an Arawak exceeding forty years of age. The speedy extermination of these people, when made to do unusual work and to suffer the hardships of the Spanish rule in the West Indies, was therefore a foregone conclusion. Cases are noted in historical records in which a landowner was assigned three hundred laborers, of whom, after three months, only thirty were alive.

Naturally these practices soon made the Lucayans change their minds about the "visitors from Heaven." At first, whenever they saw a Spanish vessel anchor off their island, they would joyfully board the craft, carrying such humble presents as they were able to give, and receive in return hawk-bells and toys, which to them seemed the most wonderful celestial gifts. But when the Spaniards began to go ashore on some of these expeditions, and to capture the men and carry them off to work in the mines of Haiti, it was not long before the Lucayans dreaded the approach of a Spanish vessel and hastened to hide themselves in the caves and underbrush. Even here the natives were not safe, for, tracked by bloodhounds, they were easily captured and carried off, as they had always been peaceful and were not able to offer the slightest resistance.

This, then, is the brief history of the extermination of the Lucayans: the men captured and carried off to work in the mines and die a miserable death; the women left widowed with no men to propagate the race. There is little wonder that after a quarter of a century the Lucayans were extinct.

RESULTS OF THE EXPLORATION

ISLAND OF PROVIDENCIALES

Juba Point.—Near a cape on the southern coast of Providenciales, called Juba Point, are two caves which, according to the report of my guide and that of the other inhabitants of a small settlement called Kingston, had never before been entered by a white man, except on one occasion, when a guano prospector had

¹ *Among the Indians of Guiana*, London, 1883.

looked into them but had failed to find sufficient guano to make the working of the caves profitable. This was about the year 1880, since which time the caves had not been entered, as the average negro is too superstitious to enter a cave at all, unless accompanied by a white man.

Both the Juba Point caves in all probability lead to a large "ocean-hole," an enormous cavity in the coral rock communicating subterraneously with the sea. In this instance the hole was about three miles inland. Usually these holes contain fresh water which

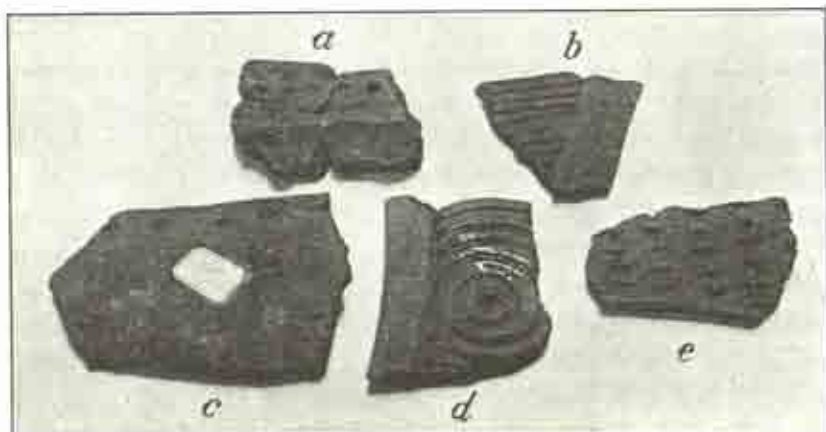


FIG. 2.—Pottery fragments.

risers and falls with the tides. The hole mentioned is fully 100 feet in diameter and about 30 feet deep, while the caves are situated within 200 feet of it.

The mouth of the first cave is about three feet in diameter; the shaft of the cave, ten feet in length, slopes downward at an angle of about 45 degrees and leads into a long chamber, which in turn branches off into two or three smaller ones of no importance. There was some guano in this cave, but careful exploration showed no signs of prehistoric habitation; this was not surprising, however, as access to the main chamber of the cave could be gained only by means of a rope.

There is a small mound outside the mouth of this cave, on which I found a small fragment of incised pottery (fig. 2, *e*).

The second cave has a larger mouth, about ten feet in diameter, a very gradually downward-sloping shaft fully seven feet wide, leading into a large main chamber with two branches, in all probability communicating with the ocean-hole. This main chamber is readily accessible, but unfortunately a great deal of limestone had fallen from the roof of the cave and had covered the floor.

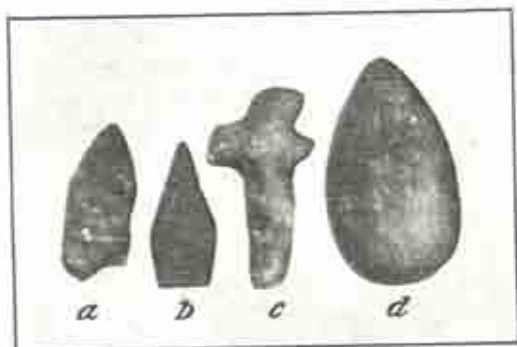


FIG. 3.—Stone implements.

There can be no doubt, however, that this cave was once inhabited, as excavation produced several pieces of charred wood, a few turtle and other bones, some fragments of pottery, and a small jadeite hatchet (fig. 3, c). This implement was found, together with some burned wood and two or three conch-shells, beneath about eighteen inches of cave-earth. The majority of the potsherds were

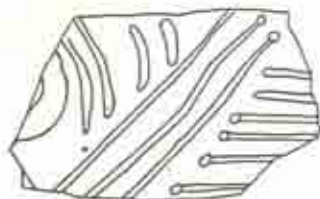


FIG. 4.—Fragment of incised pottery.

of plain ware, but three fragments show ornamentation by incision. One was part of the rim of a large bowl of light reddish-brown clay, decorated with simple straight lines; fig. 4 shows a similar fragment, of dark-brown clay, with straight line incisions and circular impressions; while the third was a fragment of a vessel of dark-gray clay, ornamented with circular impressions. Like the other material found, these sherds, as well as several unornamented ones, were found beneath earth and pieces of limestone coral.

West Harbour Bluff.—West Harbour bluff is a cape on the southwestern point of Providenciales, and an open cave is found on the western side of the bluff. This cave is practically open, with two

small protected chambers under the rock. A stretch of beach about twenty feet long leads from the cave to the sea. I found many conch-shells grown in the rocks between the cave and the beach, and this in itself is a sign of Lucayan occupancy. One can always tell a conch-shell opened by a Lucayan, from a more modern one opened by a negro, as the opening by means of which the conch is extracted from the shell is of a different shape and in a different location in the two cases.

The bottom of one of the two chambers in this cave was covered with "cave-earth," and, as throughout these pages mention will be made of this substance, it may be well to explain what it is. Throughout the Bahama islands are a great many coral limestone caves, and in the majority of these is found a species of earth, varying from light gray to dark brown in color, rich in phosphoric acid but containing practically no ammonia. Although this cave-earth is generally spoken of as "guano," from the fact that it contains such a small amount of ammonia it is hardly conceivable that the substance really is excrement, although the natives would have one believe that the bats (of which usually there is a great abundance in the caves) are responsible for the deposits. The cave-earth is deposited on the floor of the caves and in places exceeds four feet in depth.

I commenced excavation in the small chamber, the floor of which was covered with this cave-earth. This was in a rather deep layer, and the material found was practically at the bottom on ground rock. The following objects were found:

Several bones and bone implements, among which were a hoe fashioned out of a turtle-bone; three awls; one or two smaller, pointed bones probably used for ornamenting pottery, and the fang of a boar, probably employed for the same purpose. I also found about ten sherds of unornamented pottery, and three decorated fragments. Fig. 2, *d*, shows a sherd of brown clay with incised and impressed circular ornamentation. Fragment *b* of the same illustration is a part of the rim of a bowl of dark-brown ware and is decorated with incised straight lines. The third incised sherd is too small to be of special interest.

In addition to these fragments, I found a small head (fig. 5, *a*) which evidently had been part of a bowl. It is of light-brown clay, and it is noteworthy that the sloping Lucayan forehead is clearly indicated. I have noticed this peculiarity in all the other heads I have been able to find.

Indian Hill (Malcolm Roads).—From reports given me, I have every reason to believe that one could find a great deal of Lucayan material in the vicinity of the "Indian Hill" near the Malcolm Roads on the western coast of Providenciales. At the time I had no opportunity of going there, but as the Caicos negro



FIG. 5.—Pottery heads.

is too stupid to invent stories of the finding of pottery, etc., I can see no reason why these reports are not to be believed.

Blue Hills.—As in the case of "Indian Hill," I was told of the finding of stone implements, or "thunderbolts" as the negroes call them, in the neighborhood of a colored settlement called Blue Hills, on the northern coast of Providenciales.

THE AMBERGRIS CAYS

Ambergris Cay.—As at Juba Point on Providenciales, there is a large ocean-hole about a mile inland from the southern coast of Ambergris cay, and about six small caves from which underground

passages lead to the hole. These passages, however, are closed, and the only trace of Lucayan habitation that I could find was a conch-shell in the mouth of one of the caves. It is strange that no other traces on the entire island (which is about four miles long and three miles wide) could be found, as it is fairly fertile, has a good beach on the southern and eastern coasts, and would seem to be directly in the track of inter-island navigation. The caves are all small and difficult of access. I could find no mounds on the island, neither on the hills nor on the salina flats.

Little Ambergris Cay.—A small sandy cay with excellent well-water and quite a large cocoanut grove, but no traces of previous habitation.

Fish Cays.—Three small rocky cays over which the sea breaks continually in bad weather. Landing here was no easy matter, and had to be given up after one or two attempts, as the sea was running too high. It seems to me doubtful, however, whether or not I should have found any evidence of aboriginal occupancy, as even in calm weather landing must have been difficult.

NORTH CAICOS ISLAND

Sandy Point.—Sandy Point is on the northwestern coast of North Caicos, between Parrot cay and St Mary cays. On the old St James property (which a hundred years ago must have been a splendid cotton plantation and on which one may still see the ruins of a magnificent house and driveway) I found one cave with two mouths, both of which lead into the main chamber. Here I found the usual deposit of cave-earth on the floor, and on excavating in one or two places, directly under a spot where the roof of the cave was smoked as if cooking had been done there at one time, I found one or two bones (presumably of a large green turtle), one sherd of incised pottery, five or six sherds of unornamented pottery, one brown flint hatchet-head, and one highly polished black flint chisel with cut-

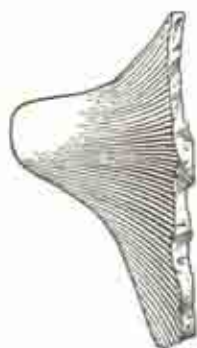


FIG. 6.—Pottery fragment showing handle.

ting-edge. This chisel is one of the most symmetrical and beautiful prehistoric stone implements known to me. The pottery fragment is part of a reddish-brown clay bowl with one of the lugs, or handles, attached.

It is to be regretted that on the Caicos islands, owing to the climatic conditions and to the rocky soil, pottery and other prehistoric objects have so slender a chance of being preserved in their entirety.

Pumpkin Bluff.—This bluff lies between Sandy Point and the mouth of Bottle creek (of which mention will be made later) on the north coast of North Caicos. Some 50 yards due east of the bluff



FIG. 7.—Fragment of Lucayan bowl.

proper is a cave with a single chamber, where I succeeded in finding an exceptionally fine fragment of a bowl of light-brown clay. The diameter of this vessel was about ten inches, and the bowl cannot have been more than one inch high (fig. 7). The forehead of the small head, as usual, has a perceptible slope. I also found the usual turtle and other bones, and a few unornamented pottery fragments. All this material, as usual, was covered with a heavy deposit of cave-earth. The rest of the cave had been filled with a considerable amount of sea-sand which must have washed in during northern storms.

Whitby.—This settlement derives its name from the old plantation in the vicinity, the ruins of which may still be seen. I could

find no trace here of Lucayan occupancy, although I heard afterward that some of the natives knew of a field in the neighborhood where potsherds had been found. I had no time then to return, but succeeded in obtaining a fairly good specimen of Indian imple-



FIG. 2.—Clearing at "Mountain".

ment, made of jadeite and quite well polished. Whitby lies about a quarter of a mile inland and one mile east of Pumpkin Bluff.

Bottle Creek.—Bottle creek is a sea inlet dividing North Caicos from Grand Caicos. The creek proper has several settlements on it, all on the west side, and allows a vessel drawing not more than three feet of water to enter through the northern mouth. The southern mouth, however, leading to the Caicos Bank, is fit for small row-boats only, and even then only at high water. Bottle creek at one time was a favorite location for large plantations, and there still are many negro settlements along its banks which derive their names from these. Many of the old plantations show traces of having been fortified against pirates, which at one time were plentiful along the northern coast of the Caicos islands and which used Bottle Creek inlet (in those days considerably deeper than now) as a convenient place for overhauling their craft.

The most northerly settlement, called Bellevue, consists of the

old McIntosh and Mountain plantations. The former place is about six miles from the northern coast, and the Mountain plantation is situated two miles inland, communicating by means of a carriage road with Bellevue proper. On "Mountain," the original clearing of the Lucayans can still be plainly seen (fig. 8). There are several mounds on these clearings, on which evidently the original inhabitants built their huts and shelter places. The sand with which the stones of these mounds must have been covered has of course been blown away, but one can still find many indications, such as broken cooking utensils, ashes, and animal-bones, that these mounds were used for no other purpose. In the mound shown in fig. 9 I found four fragments of pottery with ornamentation, seventeen fragments of plain pottery, and one hammer-head. Fig. 2, *c*, shows part of the rim of a vessel of brown clay with incised decoration. Fig. 10 shows part of the incurving rim of a dark-gray bowl



FIG. 9.—Excavating a mound.

with incised decoration, and fig. 11 a part of the flaring rim and neck of a dark-gray vessel with impressed ornamentation. Fig. 2, *a*, shows an impressed ornamentation and a hole through which a grass-rope handle could be strung,

I heard many reports of other findings on the range of hills west of Bellevue, and believe there can be no doubt that these hills were extensively used as a camping-ground by the Lucayans. Caves are found in great numbers on North Caicos, and with time and sufficient means, many important finds could be made in this neighborhood.

Another settlement, called Windsor, on Bottle creek, lies about a mile south of Bellevue. Two miles inland from this place I found another Lucayan clearing, but succeeded in finding only two ornamented sherds, both with diagonal incisions, and about eight fragments of plain earthenware. This clearing was on a hill, called Tommy Hill by the negroes, and one negress told me of finding a practically entire pot there at one time. She had, unfortunately,

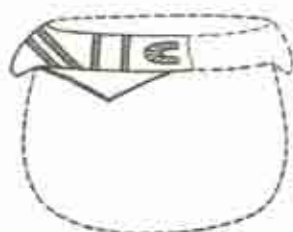


FIG. 10.—Fragment of rim of vessel.

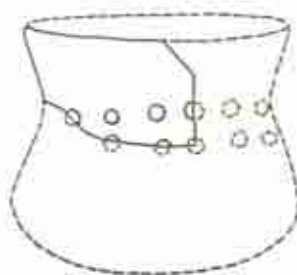
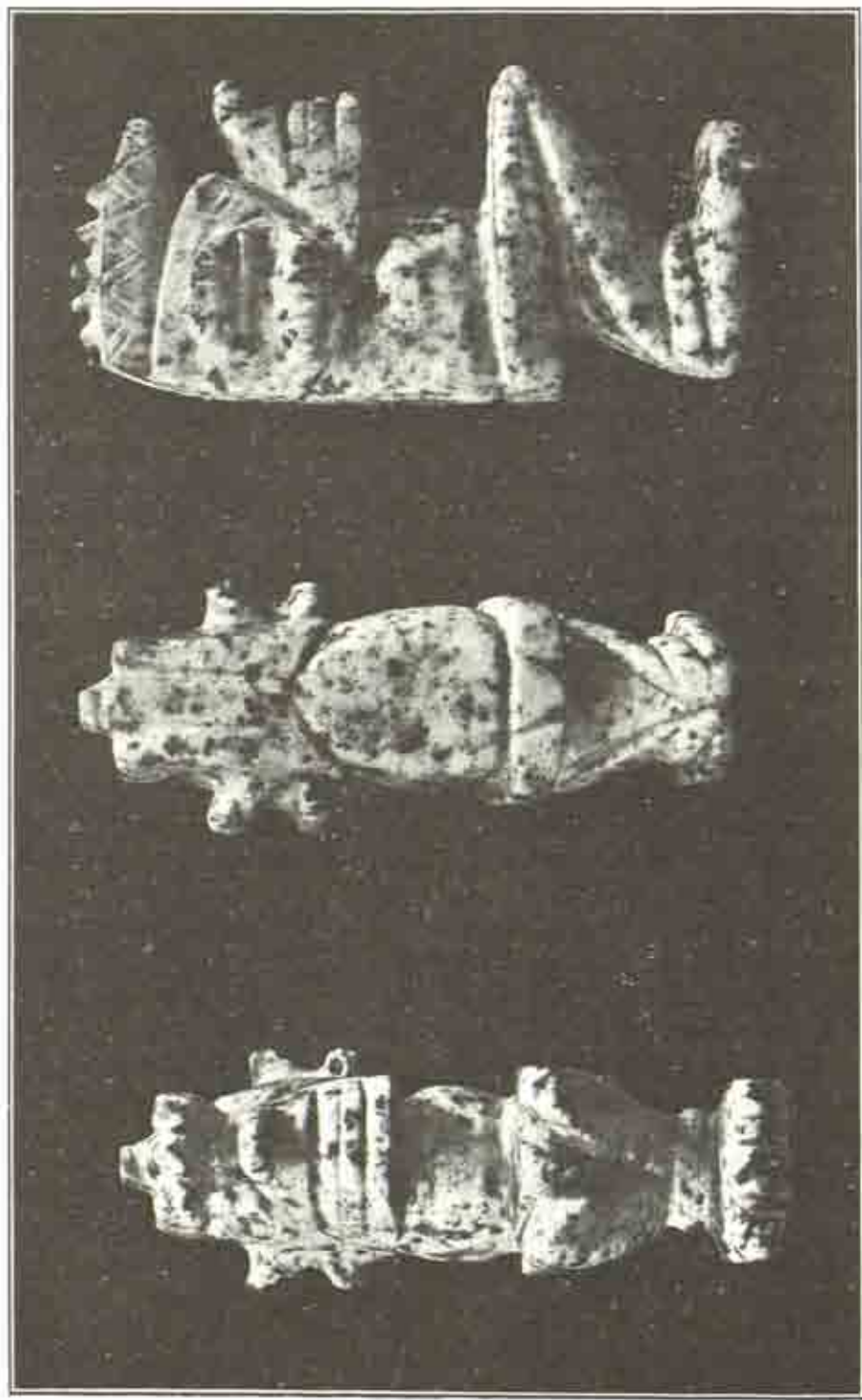


FIG. 11.—Fragment of rim and neck.

given this to her baby to play with, of course with the result that by the time I came it could no longer be found. I have noted throughout the Caicos islands that the present inhabitants take absolutely no interest in their predecessors, and beyond valuing the occasional stone implement they find as a preventive against thunder and lightning, of which they are mortally afraid, they attach no value whatsoever to any specimen of pottery found in their fields, and indeed seem to take delight in breaking up every piece they come across.

I heard further reports of pottery and implements found on the range of hills back of Bellevue and Windsor, particularly in the neighborhood of two settlements called Ready Money and Lockland. The negroes never go inland, as their fields are all within a



STONE IDOL FROM NORTH CAICOS.

mile of Bottle creek and their fish is obtained from the sea; consequently, beyond speaking of caves (which they firmly believe are haunted) and mounds, they know nothing about the interior of North Caicos. The only settlement in the interior is called Kew, formerly the seat of government of the Caicos islands, with the ruins of official buildings, a large sugar-factory, and several plantations.

Kew.—As mentioned before, Kew is the most fertile spot on the Caicos islands, and the only place where one may find trees of any considerable size. The settlement consists of about fifty houses, with 300 inhabitants, the latter subsisting on corn and sweet potatoes. I could find no actual traces of Lucayan habitation around here, but acquired one fragment of a stone implement from an old negress. This implement is made of a species of dark-green jadeite, but I cannot determine to what use it was put.

Some few years ago a very interesting stone idol was found in the neighborhood of the Kew settlement. Plate VI shows three views of this idol, which I was not able to acquire, and for the photographs of which I am indebted to Mr J. S. Cameron, owner of the East Caicos sisal plantation. It is curious to note the pierced ears and the manner in which the feather headdress is represented.

Information points to the southern border of St Thomas' Hill, in the neighborhood of Sandy Point, as a likely place for finding Lucayan material; also to a place called Boston, northeast of Kew, where some caves are said to be, in the neighborhood of which several fragments of pottery have been found.

GRAND CAICOS ISLAND

Ferguson's Point.—There are two small caves at Ferguson's Point on the northern coast of Grand Caicos. These caves are easy of access, but I could find no evidence that they had been inhabited.

Conch Bar.—Conch Bar is another settlement on the northern coast of Grand Caicos, one mile west of Ferguson's Point. Here there are several caves that about thirty years ago were worked for the cave-earth they contained. It is evident that a tribe of Luca-

yans must have inhabited these regions, as I heard of several articles that had been found at the time of the guano digging. My guide told me that he knew of two small wooden stools, several skeletal remains (which were thrown away through the stupidity of the negroes), and some crude bedsteads made of forked sticks and boughs, being found there when the cave-earth was removed. The caves have been so thoroughly emptied of all the earth that was in them, leaving nothing but the bare rock, that I was able to find no material at all. These caves all have great beauty, are easy to enter, and must have been excellent shelters and dwellings, as it is no rare occurrence to find small fresh-water lakes in them. The Conch Bar caves are the largest ones on the Caicos islands and continue underground for great distances. The "Village Cave" has several mouths, and there is yet another cave close by called the "Orange Tree Cave."

From all indications I would again state that one should be able to find much material on the hills of several of the Caicos islands. While going about I continually heard of negroes finding potsherds on their occasional trips to the interior; but as I was not prepared to stay away from the coast during the night, having to sleep aboard the craft that was taking me around the islands, I could at the time not go more than four or five miles inland. With time and means it would be an easy matter to take two or three bearers and make a prolonged stay in the interior.

In the neighborhood of Conch Bar is a hill, called Dead Man's Skull Bluff, on the crest of which is another clearing. Here I found two sherds of ornamented pottery of no especial interest, and about ten fragments of plain earthenware. These fragments, together with some turtle-bones and ashes, were found in a kind of mound that was there.

Lorimers.—Lorimers is another settlement, three and a half miles inland from Big Landing on the northern coast of Grand Caicos. It is situated on Lorimers creek, dividing Grand Caicos and East Caicos, but this inlet is too shoal for navigation other than by rowboat. There is no northern mouth to Lorimers creek, as it really is only an inlet of Caicos Bank.

About four miles southwest of the Lorimer settlement, on the salina, and overgrown with guinea-grass during the greater part of the year, is found a large number of Indian mounds—not burial places as might be supposed, but evidently erected as a shelter against the water on the salina and as a foundation upon which to build huts. These mounds average three feet high, eight feet wide, and about twelve feet long, and are built of pieces of coral rock. As a rule the mounds are arranged in a crescent, with not more than six mounds in the group (fig. 12).



FIG. 12.—Lucayan mounds.

I found five fragments of ornamented pottery, one stone knife of very dark-green jadeite with a cutting edge and highly polished (fig. 3, *b*), and on which can be seen two small nicks by which to secure a lashing, and twelve unornamented potsherds on and around the mounds. One of these fragments is part of a large dark-brown bowl with incurving rim and impressed ornamentation. In this instance the ornamentation consists of a V-shaped figure which may or may not have been a crude effort to represent a bird (fig. 13). I have found the same type of ornamentation on other fragments at different places on the Caicos islands. Another sherd is a part of the rim of a light-brown bowl with stamped circular ornamentation (fig. 14).

In addition to these mounds on the salina flats, there are two hills, about two miles north of the Lorimer settlement, called Gamble Hill and Indian Hill. On both I found mounds, although, while there were some eight or ten on Gamble Hill, I could find only



FIG. 13.—Fragment of decorated pottery.

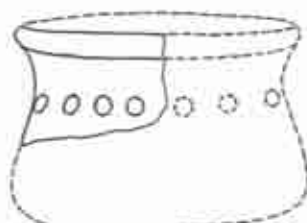


FIG. 14.—Sherd with circular decoration.

two in the brush on Indian Hill. Two ornamented sherds were found on Gamble Hill, one of which is of special interest, as the ornamentation consists of strips of clay laid over each other in regular pattern (fig. 15). I also found eight unmarked fragments

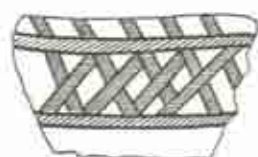


FIG. 15.—Sherd with pattern overlaid in clay.

here, while on Indian Hill I found three ornamented sherds and three plain fragments. These last six sherds are worthy of note as they plainly are of greater antiquity than any of the other pottery I have found on the Caicos islands, and the ornamentation of three of them is of the crudest, consisting merely of straight-line incisions without definite pattern. I also found one exceptionally large stone implement of green jadeite (fig. 3, *d*).

There also are two caves within a mile of Lorimers, called Dark Night Well cave and Banana Tree cave. Although an old negro told me that he had once found an entire bowl in the Banana Tree cave, I found on going there that the mouth of the cave had fallen in and was closed, and that it would take two men an entire day to open it again. I could find no trace of previous habitation in the Dark Night Well cave.

Bambara.—This is another Grand Caicos settlement, within four miles of Lorimers. Report spoke of stone implements and pottery

fragments being found in this neighborhood, but as my time was limited I could not go there.

EAST CAICOS ISLAND

Jacksonville.—The settlement of Jacksonville, on the northern coast of East Caicos, now consists of a sisal plantation of 3,000 acres belonging to the East Caicos Sisal Company, Ltd. There are

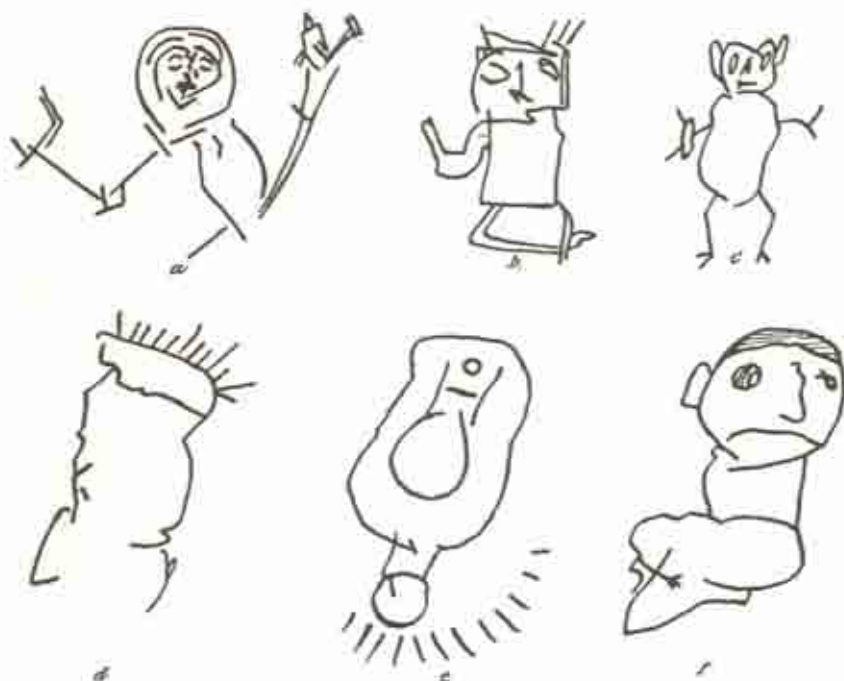


FIG. 16.—Petroglyphs in cave at Jacksonville.

several caves on this property, from which, about twenty years ago, large quantities of phosphates (cave-earth) were shipped, principally from what is known as the "Old No. 1" and the "No. 2" caves. It is said that when these excavations were commenced, several skeletons were found, also various artifacts, including a wooden stool and a platter. These two caves, however, have been so thoroughly emptied of earth that I could find nothing but bed-rock, and the same condition prevails in the "New No. 1" cave, from which also large quantities of cave-earth have been removed. It

was in this cave that I found unmistakable evidence that the main chamber had been used either as a place of worship or as a council-chamber. Various petroglyphs are found on the walls, notably those shown in the accompanying illustration (fig. 16), which are in the main chamber.

There also was a large stone in the main chamber which evidently had been cut into a rude semblance of a couch or altar; fig. 16, *d*, was cut on the roof of the cave directly over this stone. The carving of all these figures was partly obliterated, but figures *c* and *e* were most distinct. In addition to these petroglyphs there was a head, slightly larger than life-size, cut out in the rock of the main



FIG. 17.—Profile of rock and gargoyle-like figure cut therein. (The head was carved at X.)



FIG. 18.—Outline of stone fetish.

chamber, like a gargoyle (fig. 17). The drawings of the above petroglyphs are all about one-sixth of their actual size.

There is another cave on the Jacksonville property on Flamingo Hill. I could find nothing of interest in this cave; but this is scarcely to be wondered at, as the shaft of the cave runs down perpendicularly for about twenty feet. There are the usual mounds on Flamingo Hill, about eight in number, in one of which I found a small stone fetish (fig. 18), three small fragments of ornamented pottery of no especial interest, and a fragment of a stone implement of light-green jadeite (fig. 3, *a*).

Around and on another mound I found a small head belonging to the rim of a bowl (fig. 5, *c*); four sherds of ornamented pottery; about fifteen plain fragments; a jadeite chisel, highly polished, with a cutting edge; and a black flint scraper, also highly polished and with a cutting edge.

Another small pottery head (fig. 5, *b*), which has been lent to me, also was found on the Jacksonville property. This head evidently was meant to represent some animal, and I can not say whether the fact of its having no left eye is by accident or design. A small, highly polished jadeite scraper was also found here.

Kelly's Cave (Sail Rock).—According to report finds have been made here, but I had no opportunity to visit the spot.

Duck Pond Cave (Goodshill Settlement).—Here also pottery fragments and implements have been reported to occur. The Goodshill settlement is on the southwestern coast of East Caicos and about ten miles from Jacksonville.

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WAKONDAGI¹

By ALICE C. FLETCHER

A SATISFACTORY analysis of the term *wakondagi* is not possible, but its meaning can be discerned by the manner in which the word is used by the Omaha. That it is related to the idea expressed by *Wakonda* is evident; it is also clear that it is not a synonym of that term. When *-gi* is used as a suffix, it has the general significance of "possession." But it is questionable whether *-gi* in the word *wakondagi* is a suffix; nevertheless the different ways in which the word is applied to actions seem to indicate that the idea of "possessed by" is to some extent implied in the term.

"Wakonda stands for the mysterious life power permeating all natural forms and forces and all phases of man's conscious life."² The Omaha also believe "that the power of Wakonda is akin to the directive force of which man is conscious within himself."³ Observing the use of *wakondagi*, it is found that the term is applied to the first manifestation by a child of a new ability, as when it is first able to sit up, to creep, to walk, or to speak; all these actions are regarded as indications of the development within the child of an individual and independent power to act, and are spoken of as *wakondagi*. When the child walks for the first time, the act is called *moⁿthiⁿ* [to walk] *wakondagi*. When he utters his first word, that is designated as *I-e* [to speak] *wakondagi*. It is, however, only the first manifestation of an ability to walk or to speak that is thus spoken of; for, if later the child or the man, through sickness or accident, should lose the power to walk or to

¹ Owing to one of those inexplicable accidents with which most authors are familiar, the paragraphs pertaining to the subject of this brief paper were inadvertently omitted from the memoir on *The Omaha Tribe*, by the present writer and Mr Francis LaFlesche, published in the Twenty-seventh Annual Report of the Bureau of American Ethnology.

² *The Omaha Tribe*, op. cit., p. 597.

³ *Ibid.*, p. 600.

speaking, when he recovered the use of his legs or his tongue, this ability would not be classed as *wakondagi*—it would not be regarded as the manifestation by the person of a new individual and independent power.

In this connection should be recalled the Omaha view concerning the relation of the life of a new-born infant to the cosmos,¹ as well as the Omaha conception of the child's cosmic relationship at a later stage, when it had shown the ability to walk and to speak, acts denominated as *wakondagi*, and had thus given proof that it was developing into something more than "a new life," was becoming capable of recognition as an individual to whom could be given a name and a place within the tribe.²

The application of the term *wakondagi* to actions considered as manifestations of individual ability in the child seems to favor the interpretation of the word as partaking of the idea implied by the suffix *-gi*, that is, the manifestation by the child of a power derived from Wakonda, and therefore something "possessed by" that mysterious power. But this interpretation should not be pressed too far, or the native thought would become merged and lost in a definition devised by the European mind. To keep true to the Omaha thought expressed by the word *wakondagi*, the interpretation must not be allowed to crystallize, but must be kept, so to speak, in its native fluid state.

Wakondagi is applied by the Omaha to mythical monsters—creatures that have been created by the effort of man's mind to make concrete certain vague conceptions of mysterious powers that lie beyond ordinary experience and ability. In this sense *wakondagi* becomes almost a synonym of "mystery." Akin to this use of the word is its application to strange water-animals whose appearance excited dread, as, when an alligator was first seen by the Omaha it was spoken of as *wakondagi*.

Descending in the scale as to the application of the word, it is to be noted that an excessive use of a physical power is designated as *wakondagi*; for instance, when a man has a habit of loud and rapid

¹ *The Omaha Tribe*, p. 115.

² *Ibid.*, p. 117.

speech. So, too, when a person is a hard, almost an unmerciful, rider, he is said to be *shonge* [horse] *aghi*^a [rider] *wakondagi*. Even in these instances there remains a trace of the meaning already explained.

These uses of the term *wakondagi* seem to show that it represents the manifestation, either by action or by a strange physical appearance, of an invisible power that to the Omaha mind is related to the great mystery Wakonda, that which gives life and form, and permeates all things seen and known to man.

Among the cognate Osage tribe, *wakondagi* is often used in the same way and with a like meaning as the Omaha use the word *xube* [holy, mysterious, sacred], and it is also employed to designate those ceremonies and their paraphernalia that deal with mysteries and can affect human welfare. Men who treat diseases and observe occult practices are spoken of as *wakondagi*, and at the present day this term is applied to physicians of the white race.

WASHINGTON, D. C.

PROLEGOMENA TO THE STUDY OF THE SAN BLAS LANGUAGE OF PANAMA

By J. DYNELEY PRINCE

INTRODUCTION

THE *Tule*, or San Blas, Indians of Panamá number approximately fifty thousand souls, nearly all of whom live in the Panamanian province of Colon, which extends westward from the city of Colon. They seem to have a political organization, or a tribal federative system, as they have informed the writer that they recognize a head-chief, *sāglā*, whose function is to arbitrate between the lesser chieftains presiding over the various communities. These Indians will seldom if ever permit any whites within their territory farther than half a day's journey, in order that the strangers may not spend the night among them. This precaution, according to the Indians' own statement, is to avoid any possibility of blood mixture, of which they have a great horror. In fact, their dislike of the Panamanians is due largely to the mongrel character of that people, whom the San Blas look upon with contempt.

The San Blas disclaim all racial connection with other tribes, even with the Cuna of Darien, although the Cuna and San Blas dialects are very similar and the Cuna also call themselves *Tulé*. The language of the *Chuquenaque* tribe of Darien and that of the *Bayamo* clan on the Pacific side, the San Blas say, are quite different from their own, but this statement should be substantiated, when possible, by a study of the idioms in question.

Mr I. N. De Long of Cristobal in the American Zone was fortunate enough to enjoy the very unusual opportunity of accompanying an expedition undertaken by some priests to the San Blas city of San José de Nargana, where a missionary is tolerated. Here Mr De Long took the accompanying photographs (pls. VII-VIII), which admirably illustrate the physical characteristics of these Indians

and show them in their own home. He says in his letter to me of November 7, 1911:

"This town is 105 miles from Colon in a southerly (*scil.* westerly?) direction and is built upon one of a hundred small islands which are, for the most part, covered with cocoanut trees, presenting a very pretty view. The Indians live upon cocoanuts, tropical fruits, and other 'husks' not specified. The men come to Colon frequently, and there are evidences of advancing civilization, such as guns, cooking pots, etc. At the village store, they had several cans of foodstuffs and, of course, quite a supply of beer and spirits. This particular storekeeper drew attention to his place by means of an Edison phonograph! It seemed most strange to see the Indians gather about the instrument and chuckle over 'Has anybody here seen Kelly?'"

From the above, it appears that at least the frontier folk of the San Blas are beginning to become "Americanized," although even on their borders their rule against foreigners after dark still prevails.

The purpose of the present paper is to present to Americanists a preliminary study of this peculiar idiom which the writer believes is practically identical with the Cuna language of Darien, and distinctly, though distantly, connected with the Chibcha linguistic stock of Colombia. His reasons for this view are set forth at length in the following pages, which contain much matter never before published and which may prove of assistance to further philological work in this comparatively untouched field.

The material marked P. was obtained by the writer at Mount Hope, in the American Zone, from two intelligent San Blas Indians, Ina Mákhia and Ina Disélli, who were introduced to him through the kindness of Mr A. B. Shippee of Mount Hope. The rest of the San Blas vocabulary was contributed, without philological comment, by Mrs Eleanor Yorke Bell of Colon, who has long had an interest in these Indians, having published in the *Smithsonian Report* for 1909 a description of the manners and customs of the San Blas, with photographs.

PART I

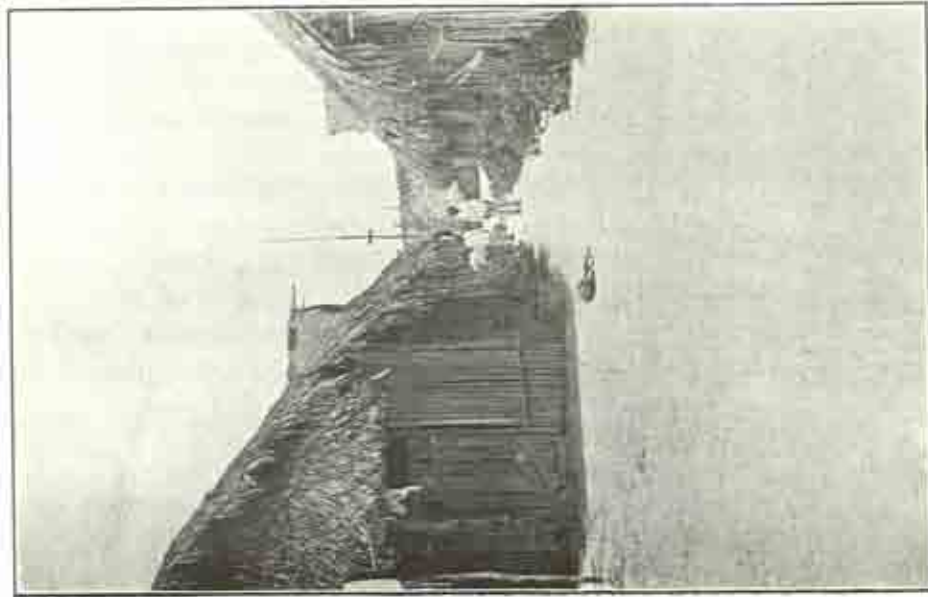
PHONETICS AND MORPHOLOGY

Since a large part of the San Blas vocabulary, on which this comparative study is based, comes from the kind contribution of



CLOSE VIEW OF WOMEN'S COSTUME

Note the moustache



STREET SCENE IN SAN JOSE DE MARICANA

Several families live in one house

Mrs Bell, the system followed in noting the San Blas words in the grammatical sketch and glossary has necessarily been to observe her use of the English values of the consonants (*c*; *g* always hard) and of the Italian vowels (except *ea* = *i* and *oo* = *u*). The vowels in San Blas are clearly pronounced and are rarely indeterminate, as, for example, in the North American Algonquian dialects, so that her method is not so defective with regard to the vowels as might appear to the phonetician at first sight. The peculiar nature of some of the consonants as observed by me is explained in the following Table of Phonetics, which should be carefully read before proceeding to the study of the Glossary (note especially the Tenuis and sub *TS*; *CH*).

The Cuna material has been gathered from A. L. Pinart, *Vocabulario Castellano-Cuna*, Paris, 1890, and also from a manuscript catechism in the Cuna language by Fr. Pedro de Llisá, *Pequeño Catecismo Cristiano*, Panamá, 1884. These Cuna words cited by me are all noted in the Spanish system of orthography. The reader will observe, however, that the *j* is the Spanish guttural *j*, while the *z* is the South American Spanish hard *s* and not the lisped Castilian *th*. The numerals in old Cuna in English notation in the following comparative table of numerals are taken from Lionel Wafer, *A New Voyage and Description of the Isthmus of America*, 1500, reprinted, and re-edited by George Parker Winship, Cleveland, 1903.

The Chibcha material has been culled from E. Uricoechea, *Gramática de la Lengua Chibcha*, Paris, 1871, in which work the Spanish notation is also used, with the exceptions that the *z* = harsh *ts* and the *x* = *ks* and not the guttural of the older Castilian. The Chibcha *y* = the English short *i* in *pin*.

The abbreviations SB. = San Blas; C. = Cuna; CH. = Chibcha; P. = Prince; B. = Bell; n., nn. = the numbered notes to the Glossary.

Table of San Blas Phonetics

Apocope of *s*, apparently in SB. *sacks* = C. *caet* 'net'; n. 40; of *g* in SB. *oowa* = C. *hugla* = CH. *gua* 'fish.'

Aspirate in SB. *éti* 'he, it' and similarly in SB. *ekto* = C. *ito*, the aspirate being represented by the *-ch-*; cf. nn. 26; 55. We find a prefixed aspirate in SB. *hogur* = C. *ucár* 'hungry; hunger'; cf. n. 30; also in C. *hugla* = CH. *gua* = SB. *oowa* = 'fish.'

For the change of aspirate to sibilant, see *CH-S* to *J*.

B-G; see *G-B*.

B-P; see *Tenues*.

B-V: SB. *ogotah* = C. *ocob* 'cocoanut'; SB. *n-erah* 'air'; lit., 'sky, day,' and SB. pl. *ne erigana* 'the days' = C. *ipé* and also = SB. *eba* 'sun.'

C-G see *G-K*; and on *Tenues*.

C(K)-P: SB. *cockéno* = *curguína* CH. *pcuapcu* 'hat,' probably all from allied stems; see *Metathesis*.

CH-N; see *N-CH*.

CH-S to aspirated *J* (= *hh*); SB. *sudru* = C. *chodna* = CH. *ja* (= *kha*) 'wood.'

CH-S; cf. *S-CH*.

CH-T: SB. *atchúo* = C. *achú* = CH. *to* 'dog.'

CH-TS; see *TS-CH*.

CH constant: SB. *chichigua* = C. *chichiti* 'negro.'

D-G: SB. *budoquízah* = CH. *bgyzua* 'die.'

D-N: SB. *pudua* = C. *punúa* 'wind.'

D-T; see = *Tenues*.

E for *A*; C. *talmai* and *telmal* 'sea' (see *Sail, Sea*). Merely a slight oversight on the part of Pinart.

F-T: SB. *fodohwey* = C. *totae* 'play.' I am doubtful as to the SB. form (B.).

G-B: SB. *negsía* = C. *nábsa* 'earth'; SB. *túlaguina* = C. *tuldabuena* 'twenty.'

G-D; see *D-G*.

G-K; see *Tenues*.

GUA-CU: C. *guápin* = CH. *cubun* 'language.'

GUE-HWE: SB. *poñwey* = C. *poque* 'cry.'

HWE-GUE; see *GUE-HWE*.

J-Y: SB. *japane(y)* = C. *yapáne* 'smell.'

K-G; see *Tenues*.

K-T: SB. *kewalo* = C. *igudla* 'river.' Perhaps an error on the part of B. (see n. 45), although *k-t* is a common phonetic change; cf. Canadian French *moitié* for *moitié* 'half.'

L omitted in SB. *cunai* = C. *cundá*.

L-N: SB. *guiley* = C. *quinégai* 'dance.' Note SB. *negsía* = C. *nábsa* 'earth' with the insert *l*.

Metathesis is of not infrequent occurrence between the dialects; thus, SB. (*s*)*acke* = *caet* 'net'; n. 40. Note also SB. *kág'le* = C. *cublégue* = CH. *cuhupca* 'seven,' and SB. *cowagai* = C. *quecúful* 'sick'; nn. 49-50. In the latter instance, the metathesis is *a(k) → g = qu(k) - c(k) : f* (= *k* here, equivalent to SB. *w*).

N-CH: SB. *ní* = C. *ní* = CH. *chie* 'moon.' Doubtful (see n. 38). The *n* here is probably the demonstrative element.

N-insert: SB. *sínmacke* = C. *chúmaque* 'speak'; also SB. *múnticke* = C. *múntique* 'night.'

N-L; see *L-N*.

N-M: see Verb: *am-pe-tahse* = *an-pe-takse*. *N-M* under the influence of the following labial.



AN UNUSUAL GROUP, OBTAINED WITH DIFFICULTY



SAN BLAS GROUP

The men dress in European style, but the women retain the native costume. Note the albino woman on the right.

N-R; see *R-N*.

Palatalization; see *J-Y*.

R omitted in SB. *cockeno* = *C. curquina* 'hat'; possibly an inadvertence of B., but note SB. *carbey* = *C. capiē* 'sleep' and see n. 50.

R-N: SB. *zudra* = *C. choóna* 'wood.'

S apocopated; see *Apocope*.

S-CH; perhaps the most common interchange between SB. and C. For full examples, see n. 3. The sibilants *S-CH* are highly palatalized in these languages = *tsy* which appears both for *S* and *CH*. See *TS-CH*.

S-T; SB. *iti* = *C. ati* = *CH. tsy* 'he, it'; SB. *ti* = *C. ti* = *CH. xie* 'water.'

T-CH; see *CH-T*.

Tenuis. The most striking feature of the SB. phonetic system is the absolutely voiceless character of the tenuis *k(c)-p-t*, which are pronounced with no aspiration whatever. This explains why Mrs Bell in SB. and Pinart in C. write *k(c)-p-t* and *g-b-d* indiscriminately, representing the pure unaspirated tenuis. In the following texts every *k-g*; *p-b*; *t-d* are *k-p-t*.

T-F; see *F-T*.

T-S; see *S-T*.

TS-CH; SB. *sipúgo* and *tsipúgua* 'white, he is white' = *C. tsipúgua*.

TS-S; see *S-CH*.

V-B; see *B-V*.

X-T; see SB. *ti* = *C. ti* = *CH. xie* 'water.' The CH. *x* = *ks*.

GRAMMATICAL NOTES

The SB. noun appears to be indeclinable, but the plural is formed by the ending *-gan*, *-gana*, *-cana*, as *macherédi* 'man', but *macherégan* 'men'; *óme* 'woman'; *ómeána* 'women'; *évi-gána* 'days.' The plural ending of the pronouns, however, is *-mal*, *mala* (also of the noun with pronominal prefixes), as *pe* 'thou'; pl. *pe-mala* 'you'; *iti*; *ati* 'he, it'; pl. *itimala*, *atmala* 'they'; *an-ula-mala* 'my canoes.' Both these endings are the same in Cuna, as *chapi* 'tree'; pl. *chapigana*; *ati* 'he'; pl. *amal* 'they' (Pinart, pp. 4-5). Nouns in SB. may be formed by the prefix *ood-*, *oot-*, as *ood-boti* 'boat'; *ood-cacolah* 'canoe'; *ootmola* 'sail.' The ending *-edi* is used in both nouns and adjectives; *macherédi* 'man'; *serrédi* 'old'; nn. 42; 62.

The demonstrative pronominal element which also serves as the definite article is *ne-*, as *ne-évi-gana* 'the days'; *ne-gseacona* 'the lakes' (the *-cona* (B.) probably = the pl. *-gana*). This demonstrative *n*-element is also apparently found in verbs, as *necktosah* 'hear'; nn. 27; 55.

The personal pronouns in SB., C., and CH. are as follows (P):

	SB.	C.	CH.
I	<i>ani</i> ; <i>an-</i>	<i>ani</i>	<i>hycha</i>
Thou	<i>pe</i> (<i>bé</i>)	<i>pe</i> ; <i>bé</i>	<i>mue</i>

He, it	<i>ĩtĩ; atĩ</i>	<i>atĩ</i>	<i>sĩsĩ</i>
She	<i>itĩ; ĩtĩ; atĩ; ome-</i>	<i>atĩ</i>	<i>sĩsĩ</i>
We	<i>anmala; ampõgũa;</i> <i>ampõgpela</i> (dual)	<i>nen; nenmal</i>	<i>chĩe</i>
You	<i>pemala; pepõgũa;</i> <i>pepõgpela</i> (dual)	<i>pemal</i>	<i>mis</i>
They	<i>ĩtimala; atmala;</i> <i>pela; pelakwõp; pelakwõppa</i> (?)	<i>amal</i>	<i>sĩsĩ</i>

SB. *pela*=C, ambali of general pl. force. See Mountain.

In SB. these pronouns are used as follows with the verb, according to the data supplied to me by Īna Mákchia and Īna Disēli at Mount Hope (see Introduction). Alternate forms admitted by these Indians are in parentheses.

<i>Tdkũ</i> 'see' = (P.).				
	Me	Thou	Him; it	Her
I		<i>am-pe-takse</i>	<i>an-takse</i> <i>an-iti-takse</i>	<i>an-ome-takse</i> <i>am-puna-takse</i>
Thou	<i>pe-an-takse</i> <i>p-an-takse</i>		<i>pe-takse</i> <i>pe-iti-takse</i>	<i>pe-ome-takse</i> <i>pe-puna-takse</i>
He	<i>iti-an-takse</i> <i>ati-an-takse</i>	<i>iti-pe-takse</i> <i>ati-pe-takse</i>	<i>iti-takse</i>	<i>(iti-ome-takse)</i> <i>(iti-puna-takse)</i>
She	<i>ome-an-takse</i> <i>puna-an-takse</i>	<i>ome-pe-takse</i> <i>puna-pe-takse</i>	<i>ome-takse</i> <i>puna-takse</i>	<i>(ome-takse-ome)</i> <i>(puna-takse-puna)</i>
We		<i>ampõgpela-pe-takse</i> <i>(anmala-pe-takse)</i>	<i>ampõgua-iti-takse</i>	<i>ampõg-ome-takse</i>
You	<i>pemala-an-takse</i>		<i>anmala-iti-takse</i> <i>pemala-iti-pe-takse</i>	<i>anmala-ome-takse</i> <i>pemala-ome-pe-takse</i>
They	<i>atmal-an-takse</i> <i>pela-an-takse</i>	<i>atmal-pe-takse</i> <i>pela-pe-takse</i>	<i>atmala-itakse-iti</i> <i>pela-takse-iti</i>	<i>atmala-takse-ome</i> <i>pela-takse-ome</i>
	Us	You		Them
I		<i>pepõgpela-am-petakse</i> <i>pemala-am-pe-takse</i>		<i>an-takse-(mala)</i>
Thou	<i>pe-an-takse-(mala)</i> <i>p-an-takse-(mala)</i>			<i>pe-takse-(mala)</i>
He	<i>iti-an-takse-(mala)</i> <i>ati-an-takse-(mala)</i>	<i>iti-pe-takse-pepõgua</i> 'he a. you two,' or <i>-pemala</i> 'you,' pl.		<i>iti-takse-(mala)</i>

She	<i>ome-an-takse-(mala)</i>	<i>ome-pe-takse-pepogua</i> 'she s. you two,' or - <i>pemala</i> , pl.	<i>ome-takse-(mala)</i>
We		<i>ampögua (anmala)-</i> <i>am-pe-takse-(mala)</i>	<i>ampögua (anmala)-an-</i> <i>takse-(amala)</i>
You	<i>pemala-an-takse-</i> <i>(mala)</i>		<i>pemala-takse-(mala)</i> <i>pelakwop-an-takse(?)</i>
They	<i>(atmal-an-takse-mala)</i> <i>pela-an-takse-(mala)</i>	<i>(atmal-pe-takse-mala)</i> <i>pela-pe-takse-(mala)</i>	<i>pela-takse-amala</i> <i>pelakwoppa-an-takse-</i> <i>mala(?)</i>

The pronominal incorporation in SB. is much simpler than that seen, for example, in Algonquian. In SB., the subject usually has the first place, the object second, and the verbal element comes last: thus, *am(=an)-pe-takse* 'I thee see'; *pe-an-takse* 'thou me seest,' etc. Yet this is not invariable, as they say: *pela-takse-iti* 'they see him,' with the object last, and *pepögpe la am-pe-takse* 'I see you,' with objective prolepsis. It will be observed that there is no such genuine assimilation of elements as appears in most of the languages of North America. The pronominal elements are really not indeterminate at all, as they are quite separable from the verb-stem and vary only insignificantly from the independent pronouns. In this respect, SB. is rather isolating than polysynthetic, so far as its verbal system is concerned. This isolating character of the idiom is more apparent when we look at such phrases as *pi(pe)-abe-neca* 'where (*abe*) do you live' = *neca* 'house,' the stem being used verbally here. This *abe* is probable cognate with C. *pia*, *piaje* 'where'; cf. also *pi(pe)-abe-tani* 'whence come you?'

As to grammatical gender there is none at all, although a 'she' and 'her' form appear above. I have given this, simply because my Indians informed me that they use the words for 'woman' = *ome* and *puna* pronominally whenever it becomes necessary to specify or emphasize a feminine meaning.

The use of the pronouns as possessive prefixes emphasizes still further the isolating character of the idiom; viz.,

<i>an-ulu</i> 'my canoe'	<i>an-ulu-mala</i> 'my canoes'	<i>anmal-ulu</i> 'our canoe'	<i>anmal-ulu-mala</i> 'our canoes'
<i>pe-ulu</i> 'thy canoe'	<i>pe-ulu-mala</i> 'thy canoes'	<i>pemal-ulu</i> 'your canoe'	etc.

<i>ʔli-ulu</i>	etc.	<i>ʔtimal-ulu</i>
'his, her canoe'		'their canoe'

In C. the same system prevails, as *an-moli* 'my horse'; *pe-moli* 'thy horse,' etc.; but Pinart (p. 5) gives the special possessive forms *angati-* 'my'; *pegati-* 'thy'; *a, atigati, agati* 'his'; *nengati* 'our'; *pemalgati* or *pemal* 'your'; *amalgati* or *amal* 'their.'

My material does not extend as yet sufficiently to enable me to state anything definitely as to the tense-system of the verbs. It seems, however, to resemble that of the C., which uses prefixes, reduplication, and *Ablaut* to distinguish between its tenses; cf. Pinart, pp. 5-6: *an nao* 'I go'; *an nanedi* 'I was going'; *an negua* 'I have gone'; *an-queb-nao* 'I will go.' In SB. the present may be used for the future, as *Sék am-pe-takse Colon-gini* 'Jack, I will see you in Colon.'

I note in SB., moreover, that *-gua* seems to indicate a predicate, as *sichtgua* 'black, he is black'; *tsipûgua* 'white, he is white'; *ichaguagua* 'he hates'; *punalôgua* 'girl, she is a girl,' etc. This is the same element seen in C. *tegua* 'who?', and also in CH. *gue*, as *ze gue* 'I am'; *mue gue* 'thou art,' etc.

Reduplication also plays some part in SB., as *nane(y)* 'walk' = the same stem as C. *nao* 'go'; seen also in C. *manégat* 'walk' = CH. *nyn*. The infix *-n-* appears in such combinations as *avaganecktoga* 'feel,' q. v. Note that 'taste' = *ecktoqe*, so that *-n-* may be the prepositional element = 'in'(?). Cf., however, the demonstrative *-n-* seen in verbs, as *necktosah* 'hear.'

The SB. numerals (P.) are as follows, given in comparison with the C. and the Old Cuna from Wafer (see above), pp. 167-168. It will be observed that the Chibcha numerals also given below differ perceptibly from the SB.-C.

	SB.	C.	Old C.	CH.
One	<i>kwénchakua</i>	<i>cuénchique</i>	<i>conjuco</i>	<i>ala</i>
Two	<i>pôqua</i>	<i>pacua</i>	<i>poquah</i>	<i>boza</i>
Three	<i>pâqua</i> (<i>pâgua</i>)	<i>pagua</i>	<i>pauquah</i>	<i>mica</i>
Four	<i>pakêgua</i>	<i>paquégua</i>	<i>pakequah</i>	<i>muyhica</i>
Five	<i>atêle</i>	<i>atêle</i>	<i>eterrah</i>	<i>kyzca</i>
Six	<i>nerhwa</i>	{ <i>nercua</i> <i>nericua</i> }	<i>indricah</i>	<i>ta</i>

Seven	<i>kūg'le</i>	<i>cublégue</i>	<i>coogolah</i>	<i>cuhupca</i>
Eight	<i>pábaka</i>	<i>pabacá</i>	<i>paukopah</i>	<i>suhuza</i>
Nine	<i>pakébaka</i>	<i>paquébague</i>	<i>pakekopah</i>	<i>aca</i>
Ten	<i>ambégi</i>	<i>ambégui</i>	<i>anivego</i> (sic!)	<i>ubchihica</i>
Eleven	<i>ambégi kaká</i>	<i>ambégui cacá</i>	<i>anivego</i>	
	<i>kwenchakwa</i>	<i>cuenchique</i>	<i>conjugo</i>	
	etc.	etc.	etc.	
Twenty	<i>túlaguena</i>	<i>tulábuena</i>	<i>toolahoguah</i>	
Thirty	<i>tuláguena-kaká-</i> <i>ambégi</i>	<i>tulábuena cacá-</i> <i>ambégui</i>		
Forty	<i>tulábógua (-pōqua)</i>	<i>tulápocua</i>		
Fifty	<i>tulábógua-kaká-</i> <i>ambégi</i>	<i>tulápocua-cacá-</i> <i>ambégui</i>		
Sixty	<i>tulápágua</i>	<i>tulápagua</i>		
Seventy	<i>tulápágua-kaká-</i> <i>ambégi</i>	<i>tulápagua-cacá-</i> <i>ambégui</i>		
Eighty	<i>tulápakégua</i>	<i>tulápaguegua</i>		
Ninety	<i>tulápakégua-kaká-</i> <i>ambégi</i>	<i>tulápaguegua-cacá-</i> <i>ambégui</i>		
Hundred	<i>túlatále =</i> <i>tula-atle</i>	<i>tulá atle</i>		

The SB. numerals, like the adjectives, follow the noun, as: *macherédi pōqua* 'two men'; *puna poqua* 'two women'; *mériki sipúgo* 'white American'; *an-ulu-mala pāqua* 'my three canoes,' etc.

A study of the above table reveals the following facts. A reduplication of the *g(k)*-element appears in the SB.-C. *pakégua-paguegua* 'four,' a lengthening of SB.-C. *pāqua-pagua* 'three' and in SB.-C. *pakébaka-paquebague* 'nine,' a lengthening of SB.-C. *pábaka-pabacá* 'eight.' This lengthening, like the similar phenomenon in CH., seems to add *one* to the numeral thus treated (see just below).

Old C. *anivego* must be an error for *amvego* = SB.-C. *ambégi-ambégui* 'ten.' Note also the interchange between *l* and *r* in SB.-C. *atále* = Old C. *eterrah*.

SB. *kūg'le* 'seven' is identical with old C. *coogolah*, whereas C. *cublégue* 'seven' = CH. *cuhupca* and are apparent metatheses of the same stem. Note also the apparent metathesis in Old C. *pakekopah* 'nine' = SB.-C. *pakébaka* = *paquébague*, and see nn. 49-50; or is *pakekopah* an error of Wafer's?

Above nineteen, the SB.-C. numerals run by adding to the score = *túlagwéna* 'twenty'; thus, 'thirty' = a score and ten; 'forty' = two scores; 'fifty' = two scores and ten, etc.

Note in CH. *mica* 'three' and its lengthened form *muyhica* 'four' that the distraction seems to add *one* to the original numeral, like the lengthening in SB.-C. mentioned just above.

CH. *boza* 'two' is probably cognate with SB.-C. *pōqua-pocua*, while CH. *aca* 'nine' seems cognate with the final *-ka-gue*-element in SB.-C. *pakébaka-paquébague*.

Prepositional construction is expressed by postpositive particles, as *Colon-gini* 'in Colon'; *an-ula-gini* 'in my canoe,' etc. Cf. C. *necaguín* 'in the house,' etc.

The Affinity between SB.-C. and CH.

The practical identity of the SB. with the C. will be seen and appreciated from the above brief phonetic and morphological sketch and will be further demonstrated in the following comparative glossary. As to the relationship between this Isthmian group and the Chibcha family of Colombia, this is not so apparent at first sight, and yet, a comparison of the following resemblances should satisfy the philologist that the SB.-C. and the CH. must either have been originally the same at base, or else, at some ancient period, have stood so closely in connection as to influence each other. It is true that the pronouns and numerals differ widely between the two stocks, still, even at these points, a careful comparison seems to reveal a radical similarity in at least two instances. Thus, in CH. the 2 p. *mue*, pl. *mie* 'thou, you,' is probably the same stem as the SB.-C. *pe(be)*. There is a very evident relationship between SB.-C. *i'ti, ati* 'he, she' and CH. *sīsy*, with the not unusual change between *t* and *s*; cf. n. 26 and compare the familiar Ashkenāzi pronunciation of the Hebrew consonant *Tav* as *Sav* after vowels. This is owing to the degeneration of the soft *t* = *th* into the sibilant. As to the other pronouns, the CH. *hycha* 'I' and *chie* 'we' undoubtedly contain the same *ch*-element of the 1 p., changed in CH. to *ze-* in the verbal system. This seems to differ radically from the *n*-element of the SB.-C. first person, but even here there may be a

connection, as changes between *n* and a sibilant are noted in Chinese (cf. Prince, *Materials for a Sumerian Lexicon*, p. xii and see this article, n. 38). Note also that the CH. verbal element *gue* is clearly cognate with the SB. predicate *-gua* (see above).

Table of Affinities

See in glossary s.v. the following words:

Air, bad, bird, boy, buy, bring, die, father, fish, give, hat, he, in, it, lake, language, man, moon, net, nine, rain, sad, send, seven, sleep, thou, three, tree, two, walk, water, wood.

PART II

COMPARATIVE GLOSSARY

	SAN BLAS	CUNA	CHIBCHA
Air	<i>nevah</i> ¹⁴		<i>fiha</i>
American	<i>meriki sipigo</i> (P.) 'American white man.'		
And	<i>kaká</i> (see Numerals).	<i>caod</i>	
Animal	<i>achosapopaliti</i> ¹⁵	<i>ib</i>	
Bad	<i>obah</i> ²	✓ <i>istar</i>	<i>achuenza</i> 'bad thing'
Belong	<i>pi-abe-nega</i> 'Where do you b.?' Contains <i>nega</i> 'house,' b. v.		
Big man	<i>tuletumadi</i> (P.)	<i>gudyártan</i>	
Bird	<i>siquey</i> ²	<i>chicú</i> ²	<i>sue</i> ² ; <i>sue guana</i>
Bite	<i>cunai</i> ⁴	<i>cundia</i> ⁴	
Black	<i>sichigua</i> ⁴ (P.)	<i>chichiti</i> ²	
See Negro.			
Boat	<i>oodboti</i> ²		
Boy	<i>machés</i> (P.); <i>machigua</i> ⁶ P.	<i>máchiguá</i> ⁴	<i>guasgua</i> ⁴ <i>cha</i>
Bring	<i>sadage</i> ²	<i>chetáque</i> ²	
Buy	<i>packey</i> ⁷		<i>bcuscua</i> ⁷
Canoe	<i>oodocolah</i> ⁵ ; <i>ula</i> ⁸		
Carry	<i>sedey</i> ³	<i>chetáque</i> ²	<i>zemoscua</i> ; <i>bsoscua</i>
Chief	<i>ságlá</i>	<i>urunia</i>	
Clothes	<i>moia</i> ⁴	<i>yóque</i>	
See Sail.			
Cocanut	<i>ogovah</i> ³	<i>ocob</i> ⁴	

Cold	<i>temperipa</i> ¹⁸	<i>tampe</i> ¹²	<i>anyan mague</i> ; <i>nyco hichuc aguacua</i> ; <i>hichupeua</i> .
Come	<i>an-eksenai an-ula-gini</i> (P.) 'I come in my canoe'; <i>pi-abe-luni</i> ²¹ 'whence come you.'	<i>tanique</i> ²¹	
Cry	<i>pohwey</i> ²²	<i>pogue</i> ¹²	<i>seconsuca</i>
Cut	<i>sickey</i> ²	<i>chigileja</i> ²	
Dance	<i>guiley</i> ²²	<i>guinegal</i> ²²	<i>bazahanasuca</i> ; <i>benysuca</i> ²²
Dark	<i>secsequa</i> ²	<i>chichiti</i> ²	
Days	<i>ne</i> ²⁴ <i>evigana</i>	<i>ipa</i>	<i>sua</i> 'sun'
Devil	<i>nian</i>	<i>niya</i>	<i>guakayogue</i>
Die	<i>buloquizah</i> ¹⁴	<i>purque</i> ¹⁴ ; <i>oguigugal</i>	<i>ogysuca</i> ¹⁴
Dog	<i>alchuo</i> ¹⁸	<i>achu</i> ¹⁸	<i>to</i> ¹⁸
Drink	<i>cohey</i> ²²	<i>cope</i> ²²	<i>biokotyruca</i> ; <i>maiota</i> ; = \sqrt{to}
Dry	<i>yinagna</i> ²²	<i>timi</i> ²²	<i>buchua</i>
Eat	<i>cuney</i>	<i>cune</i>	<i>bsosrua</i>
Earth	<i>negsila</i> ¹⁸	<i>ndbsa</i> ¹⁸	<i>hicha</i> (element); <i>qui-</i> <i>ca</i> (country)
Eight	<i>pabaka</i> ¹⁸ (P.)	<i>pabac</i> ¹⁸	<i>suhua</i>
Eighty	<i>tulapakegua</i> (P.)	<i>tulapaguegua</i>	
Father	<i>beber</i> ; <i>paba</i> (P.)	<i>patiri</i> 'priest'; <i>pap</i> <i>paba</i>	
Feel	<i>avaganechtoga</i> = 'taste in feeling'; see Taste, Healthy, How.		
Fifty	<i>tulaboguchakambegi</i> ²⁰ (P.)	<i>tulapocua-cacé-</i> <i>ambegi</i> ²²	
Fish	<i>sovea</i> ²²	<i>hugua</i> ²²	<i>gua</i> ²²
Five	<i>atdle</i> (P.)	<i>atdle</i>	<i>kysca</i>
Food	<i>sapeturpa</i>	<i>ono</i>	
Foreigner	<i>waga</i> (P.)		
See Spaniard.			
Forty	<i>tulabogua</i> (P.)	<i>tulapocua</i>	
Four	<i>pakegua</i> (P.)	<i>paguegua</i>	<i>muyhica</i>
Girl	<i>panalogo</i> ; <i>punalogua</i> (P.)	<i>pund</i>	<i>guasgua fucha</i>
See Woman.			
Give	<i>okey</i> ²² =	<i>uisulagus</i> 'g. me.'	<i>hocmuyscua</i> ²²
God	<i>Beber</i>	<i>Dios</i> ; <i>Quilule</i> ²²	
See Father.			
Good	<i>nawedi</i> ; <i>nawedi</i> ²⁶ = (P.)	<i>nukueti</i>	<i>cho</i> 'a g. thing.'
Good-bye	<i>teginula</i>		

Hammock	<i>catchi; kochi</i> (P.)	<i>cachí</i>	
Happy	<i>naperijitoge</i>		
Hat	<i>cachéno</i> ²³	<i>cargúina</i> ²³	<i>pcuapcuu</i> ²³
Hate	<i>ichaguagua</i>		
He	<i>iti; ite</i> ²⁴ ; <i>ati</i>	<i>ati</i> ²³	<i>sisy</i> ²³
Healthy	<i>avacsnuedi</i> = good in feeling; see Feel, Good, How.	<i>nuhuer</i>	<i>chogue</i> 'he is well.'
Hear	<i>necktosah</i> ^{27 28}	<i>itō</i> ²⁷	<i>muypcuasuca</i>
Help	<i>bendaki</i>		
Her, hers; see	Pronouns.		
His; see	Pronouns.		
Hit	<i>nacksah</i>		
Hold	<i>cahey</i>		
Horse	<i>mōli</i> (P.) ²⁸	<i>molocabāi</i> ²⁸	
Hot	<i>huerpa</i>		<i>chituc aguene</i> 'be h.'
House	<i>nega</i> ^{29 30} ; <i>neca</i>	<i>neca</i> ²⁹	
See Marry,	Belong.		
How	<i>igi pe ar'guna</i> (P.) 'how do you do?' The stem is the same as in (<i>avaga</i>) <i>necktoga</i> ; see Taste, Healthy.	<i>igui</i> 'how,' but <i>pe-ago-gandi pulegua</i> 'how do you do?'	
Hundred	<i>tudatle</i> (P.) 'five twenties'	<i>tulā atle</i>	
Hungry	<i>hogurapa</i> ³¹	<i>ucur</i> ³² 'hunger'	<i>chahac</i> 'be h.'; <i>achan-suca</i> ; ✓ <i>cha</i> .
I	<i>āni, an-</i> (P.)	<i>ani</i>	<i>hycha</i>
In	<i>-gini</i> (postposition)	<i>-guin</i>	-n
Indian	<i>tule</i> ; lit. 'a live person'; see Live; <i>an-tule-gata-wāzi</i> 'do you speak San Blas language?'	<i>tulē</i> 'Cuna'	
It	<i>iti</i> ²⁴	<i>eti</i> ²⁴	<i>sisy</i> ²³
Jack	<i>Sikē</i>		
Lakes	<i>negscacona</i> ³¹	<i>matā</i>	<i>xiao</i> ²¹
Language; see	Indian.	<i>guāpin</i> ²²	<i>cubun</i> ²²
Laugh	<i>alley</i> ³¹	<i>alepitar</i> ²²	<i>zegyhuasuca</i>
Leaf	<i>sapēcah</i> ³	<i>chapēca</i> ³	
Lie	<i>cackunsai</i>	<i>cacina</i> (noun)	
Light (adj.)	<i>negmegua; canerukoi</i>	<i>talāi</i>	
Little; see	<i>itsēgua</i> ³⁴ 'a little'	<i>ichēgua</i> ³⁴	
Small,			

Live	<i>túle</i>	<i>tulégua</i>	<i>opcuabiza</i> alive
See Belong.			
Love	<i>abeyeh²¹</i>	<i>chabúet²¹</i>	<i>btzizisuca</i> ; <i>atyim</i>
Mau	<i>macherédí²¹</i> = (P.)	<i>mastól²¹</i>	<i>muyisca²¹</i>
Marry	<i>omenecuey²²</i>		<i>isahaoacbgascua</i>
See Woman.			
Meat	<i>zanah²³</i>	<i>chana²³</i>	
Men	<i>macherégan</i> (P.)		
Metal.	<i>esnumoderite</i>		
Moon	<i>ní²⁴</i>	<i>ní²⁴</i>	<i>chie²⁴</i>
Mother	<i>nana</i>	<i>nand</i>	
Mountain	<i>yahaláh</i>	<i>chapúr</i> , but <i>yald-gambóli</i> 'on the high mountains,' with pl. <i>-ambali</i> .	
Music	<i>calnamachi</i>		
My; see Pronouns.			
Negro	<i>chichigua²⁵</i> (P.)	<i>chichití²⁵</i>	
Net	<i>sacke²⁵</i>	<i>hugúa cast²⁵</i> 'fish-net'	<i>iaia²⁵</i> 'fish-net'
		net'	<i>quyne</i> 'hunting net'
Night	<i>mánticke²⁶</i>	<i>mántique²⁶</i>	<i>22</i>
Nine	<i>pakébaka</i> (P.)	<i>paquébague</i>	<i>aca</i>
Ninety	<i>túlapakéguahákambégi</i> (P.)	<i>tulá-paquéguo-cacá-ambéguí</i>	
Old	<i>ierredí²⁷</i>	<i>patóguí</i>	<i>tybara</i> ; <i>tybacha</i> <i>saca</i> 'old thing'
One	<i>kwénchakwa</i> (P.)	<i>cuénchique</i> ; = <i>qñe</i> (?)	<i>ata</i>
Our; see Pronouns.			
Paddle	<i>camíya</i>	<i>cáme</i>	
Panamanian	<i>wága sichigua</i> 'black foreigner' (P.)		
Play	<i>fodohwey²⁸</i>	<i>tolai²⁸</i>	
Quick	<i>quatequah</i>		
Rain	<i>tíwla²⁹</i>	<i>tí</i> ; <i>tigúle</i> , <i>tiguai²⁹</i>	<i>sin²⁹</i>
Rest	<i>opunowey</i>	<i>uhicuz</i>	
River	<i>kewalo³⁰</i>	<i>tí</i> ; <i>tigúala</i>	<i>sie</i> , <i>sie</i>
Sad	<i>oodwey</i>	<i>itorquesi</i>	<i>apgunyuy</i> ; <i>asucan</i> <i>mague</i> 'sad person'
San Blas Indian; see Indian.			
Sail	<i>ootmola</i> ; <i>ulu³¹</i> ?	<i>talmól</i> <i>mold</i>	
Sea	<i>telmalah³¹</i>	<i>telmól³¹</i>	
See	<i>tágsah³²</i> ; <i>takse</i> (P.)	<i>atdc³²</i>	<i>zemistysuca</i>
Sell	<i>oobey³²</i>	<i>uquégal³²</i>	<i>zemihistysuca</i> <i>zemutysuca</i>

Send	<i>parmité(y)</i> ⁴²		<i>hizusuca</i> ⁴³
Seven	<i>zúg'le</i> (P.) ⁴⁴	<i>cublégua</i> ⁴⁴	<i>cuhupca</i> ⁴³
Seventy	<i>túlápáguakukámbégi</i> (P.)	<i>tuld-págua-cacó- umhéguí</i>	
She	<i>ití⁴⁵</i> ; often pure fem. <i>ome-</i> ; see Verb (P.)	<i>ati</i> ⁴⁶	<i>sizy</i> ⁴⁶
Shore	<i>kakah</i>		
Sick	<i>cowagá</i> ⁴⁶	<i>quecújal</i> ⁴⁶	<i>tusuca</i>
Sing	<i>namackey</i>	<i>namáque</i>	
Six	<i>nérkwa</i> (P.)	<i>narcua; nericua</i>	<i>tá</i>
Sixty	<i>túlápágua</i> (P.)	<i>tuld págua</i>	
Sleep	<i>carbey</i> ⁴⁶	<i>capíí</i>	<i>seguybyuca; aguybu</i>
Slow	<i>pinagua</i>		
Small	<i>peckpequa</i>	<i>tológua; chení</i>	<i>ynquecunga</i> 'a s. thing'
Smell (vb)	<i>japane(y)</i> ⁴⁷	<i>yipáne</i> ⁴⁸	
Snake	<i>nágpey</i>	<i>nágpe</i>	<i>muyso aguycagne</i>
Spaniard	<i>wága sipúgo</i> ⁴⁸ (P.) 'white foreigner'		
Speak: 'you s. Indian'	<i>pe-túle-gáta-wázi;</i> 'I speak' <i>án-wázi</i>		
Spear	<i>ezwalah</i>		
Star	<i>nesguao</i> ⁴⁸	<i>nicheni</i> ⁴⁸	<i>fagua</i> ⁴⁸
Steal	<i>attusai</i>		
Strike	<i>nackzah</i>		
Strong	<i>canorapoh</i>		<i>uchihincan moque</i> 'a s. person'
Sun	<i>ebu</i> ⁴⁸ ; <i>tada</i>	<i>ipé</i> ⁴⁸ ; <i>tata</i>	<i>tua</i>
Swim	<i>tommackey</i>		<i>ihyzagoscua;</i> <i>cambzascua;</i> <i>cambquyucua</i>
Take	<i>suey</i>		<i>zecubunincá; see</i> <i>Language</i>
Talk (see Speak)	<i>sánnackey</i> ⁴⁸ 'you t. to me' <i>pundatsógi</i>	<i>chúmaque</i>	
Taste	<i>echtoge</i> ⁴⁸	<i>tióguetú</i> ⁴⁸	
Ten	<i>ambégi</i> (P.)	<i>ambéguí</i>	<i>ubchihíca</i>
Their; see Pronouns.			
They	<i>ámdla</i> ⁴⁸ (P.); <i>pela</i>	<i>amal</i> ⁴⁸	<i>xyxy</i>
Thirty	<i>túlágwánakakámbégi</i> (P.)	<i>tuld buena-cacó- ambéguí</i>	
Thou	<i>pe, be</i> (P.)	<i>pe, be</i>	<i>mue</i>
Three	<i>páqua</i> (P.)	<i>pagua</i>	<i>mica</i>
Throw	<i>modey</i> ⁴⁷	<i>tarmétagal</i> ⁴⁷	
Thy; see Pronouns.			
Tiger	<i>atichuo patparit</i> ⁴⁸	<i>purtiquét</i> ⁴⁸ <i>imíá</i>	

Tree	<i>sapewala</i> ¹ ²¹	<i>chapi</i> ²² ; <i>gual</i> ²³	<i>guye</i>
Turtle	<i>jawóka</i>	<i>monó</i>	
Two	<i>póqua</i> (P.)	<i>pocua</i>	<i>bosa</i>
Twenty	<i>tuláguena</i> (P.)	<i>tulábuena</i>	
Walk	<i>nane</i> (y) ²⁴	<i>monéga</i> ²⁵	<i>inynsuca</i> ²⁶
Water	<i>ti</i> ²⁷	<i>ti</i> ²⁸	<i>zie, xie</i> ²⁹
We	<i>ámipóqua</i> (P.) ³¹ ; <i>anmala</i>	<i>nen; nenmal</i> ³²	<i>chie</i> ³³
Weak	<i>nolowah</i>		
Well (adv.)	<i>nunedi</i> ³⁴ ³⁵ (P.)	<i>nukneti</i> ³⁶ ³⁷	
Wet	<i>waroqua</i> ³⁸	<i>gualagna</i> ³⁹	<i>totuc tegazewa</i> 'moisten'
Where	<i>abe</i> (see Belong)		
White	<i>sipúgo</i> ⁴⁰ ; ⁴¹ ; also <i>tsipugua chipúgua</i> ² 'he is w.' (P.)		
Wind	<i>puúa</i>	<i>puúa</i>	<i>fiáa</i> ; see Air
Woman	<i>ome</i> ; pl. <i>omecana</i> ; <i>ome-</i> <i>yagua</i> 'young w.' <i>puna</i> (P.)	<i>punúga</i>	<i>muysca fucha</i> ; <i>fuhucha</i>
Wood	<i>suara</i> ⁴²	<i>choína</i> ⁴³	<i>ja</i>
Work	<i>arpai</i>	<i>arpaguet</i>	
You	<i>pémáa</i> (P.)	<i>pemal</i>	<i>mie</i>
Young	<i>sépingua</i> (P.)		
Young girl	<i>omeyóguá</i> (P.)		
Youth = young			
lad	<i>uápingua</i> (P.)		
Your; see Pronouns.			

NOTES TO GLOSSARY

¹ Contains SB. *atichuo* 'dog.'² This probably has no connection with *obeah* in common use in the West Indies, to denote evil magical rites. *Obeah* is usually derived from a West African source.³ Note *s* = *ch*; see s.v. bird, black, bring, carry, cut, dark, laugh, meat (but see nn. 39; 52); star (n. 53); talk, tree, wood. Note here SB. *-guy* = C. *-cui* seems to be identical with CH. *-gua*(no).⁴ Note the omission of *l* in SB.⁵ *Ood-* preformative + Sp. *bote*; see Canoe, Sail.⁶ CH. *guazgua* 'young person' + *cha* 'male'; perhaps CH. *s* = *ch* in SB.; C. *machigua*. See Girl in CH. and n. 36. In Quito in Ecuador *guambra* is the slang local word in Spanish for 'boy; girl.' Is this *gua-* element from Quichua and perhaps cognate with CH. *gwa* in *guazgua*?⁷ SB. *p-k* = CH. *p-c*; *p* = *b*; see Phonetics.⁸ *Ulu* 'canoe' seen in SB. *oodcac-olañ* 'canoe'; *telmalak* 'sea,' which latter word appears in C. both as *talmal* and *telmal*; see Sail, Sea. In SB. *oomola* 'sail,' however, we have evidently the same stem as in SB. *mola* 'clothes' = 'cloth,' probably a different element from SB. *ulu* 'canoe,' *telmalak* 'sea.' There is no connection with SB. *mali* 'horse.'

⁹ SB. *v* = C. *b*. Cf. n. 14.

¹⁰ SB. *v* = C. *d*. Note SB. *-vipa* = ?

¹¹ SB. *tani* = C. *tanéq*.

¹² SB. *-wey* = C. *-guz*; cf. n. 63.

¹³ SB. *quíl-* = C. *quin-*; *l-n*; cf. n. 63 *r* = *l*. CH. *bquy-* = SB. *quíl-* = C. *qui(n)*.

¹⁴ *Ne* = definite article; see n. 31; *-gana* = pl. ending.

¹⁵ SB. *budoquitz(oh)* = CH. *bgyo(cua)*; viz., *b* = *b*; *d* = *g*; *z* = *z*, C. *porque* seems cognate with SB. *b-d-qu* = C. *p-r-qu* (= *k*)? Note SB. *ev-*, C. *ipd* and SB. *nevah*, also with dem. element *n*.

¹⁶ CH. *to* is probably not an *neologismo de la interfección castellana* "to" (thus Uricoechea, s.v. *perro* 'dog'), but a cognate of SB. *atchna*. Note *ch* = *t*.

¹⁷ *B* = *p*; see Phonetics. Note also SB. *(y)tna-gua* = C. *(t)ind* 'dry'. SB. has the predicate *-gua*.

¹⁸ *G* = *b*, but why the SB. *l*-insert?

¹⁹ Note difference in voice-stress.

²⁰ SB. *kaká*—C. *cacá* 'and' = forty + ten.

²¹ Note elision of *-g* in SB.

²² SB. *oohay* = CH. *hoc*.

²³ C. *quilele*, probably = *Christmas* + *lele*?

²⁴ *Nwéddi* (Bell); *nwéddi* (P.); difference of spelling explained by the indeterminate character of the vowel. Note *-d* in C. *nukúdi*, which shows the indeterminate *i-d*. See Phonetics and also n. 62.

²⁵ All the same stem (?) SB.-C. *c(k)-k* and CH. *p-c*; *p* = *k*(?).

²⁶ I heard an aspirate plainly here and also *ati*; cf. n. 35. Note SB.-C. *t* = CH. *jt* also in SB.-C. *ti* = CH. *tie*. Cf. n. 44.

²⁷ In SB. the demonstr. *ne* + *ekto* = C. *ito*; see also n. 53.

²⁸ No connection with *ulu* 'canoe'; *islmalah* 'sea'; see n. 8. The element *-cabli* = Sp. *caballo*.

²⁹ *G* = *c(k)*; see Phonetics and n. 17.

³⁰ Note the aspirate in SB.

³¹ SB. *negreacóna* = dem. *ne* (see n. 14) + *gacá* = *kci* = CH. *xi* in *xine* + the pl. *-coná* = *-gana* (see Grammar). Note the CH. form *xie-xie* 'water' = SB.-C. *ti*. See n. 26 and 34.

³² Note C. *gu* (*gw*) = CH. *c(k)*.

³³ Common root *al*.

³⁴ *Tj* and *ch*; see Phonetics.

³⁵ Note preformative *ch-* in CH. The root is probably *abé-ahn*.

³⁶ SB. *mách* = C. *mai* = CH. *mayá*. See n. 6.

³⁷ *Ome* 'woman' and *neq* = *neca* 'house' + verbal *-(i)ey* lit. 'to house a woman.' Cf. Sp. *casarse*.

³⁸ Query: Is the real element *i* + dem. *n* in SB. and C., and dem. *ch* in CH., or is it a change from *n* to *ch*, like *n* to sibilant in Chinese and Sumerian (Prince, *Materials for a Sumerian Lexicon*, p. xii; see n. 61)? The latter is more probable.

³⁹ Note constant *ch* in SB. and C., but *ichligna* also means 'black' in SB.; *s* = *ch*; cf. n. 3. See s. v. Panamanian.

⁴⁰ I see a connection between SB. *(i)ucke*, C. *cac(i)* and CH. *uia*, C. *xar(i)*. Probably also CH. *q* in *qyne* belongs here.

⁴¹ Note nasal insert in SB.

⁸⁰ Note the same ending *-edi* as in *machredi* 'man,' q.v. probably also the same *-edi* as in *unvedi* 'good'; n. 62.

⁸¹ I cannot explain SB. *f* apparently = C. *t*.

⁸² Contains *ti* 'water'; observe SB.-C. *t* = CH. *s*; cf. n. 26.

⁸³ I suspect that Mrs Bell's text should read SB. *tiawlo* = C. *ti* + *gwai*. Cf. s. v. Rain in Cuna. On CH. *xie* = *knie*, cf. n. 31.

⁸⁴ Mrs Bell evidently heard a longer vowel than I did; *tagah* (B.); *tāksā* (P.).

⁸⁵ The root seems to be *ah* in SB. and C. See Give, and cf. n. 22.

⁸⁶ SB. *p(r)m* = CH. *b(i)n* (?).

⁸⁷ Note the metathesis between SB. and C.-CH., and see n. 50.

⁸⁸ SB. *c-w-g* = C. *ga(k)-c-f* (= *h* = *w*). See for metathesis, n. 49. Is the *r* factitious in SB. *corbey* (R.)?

⁸⁹ SB. *j* = C. *y*, a real palatalization.

⁹⁰ SB. *zipugo* and *tsipugo*; see White; *s* = *ts*; really a highly palatalized *ch*. See nn. 3, 53.

⁹¹ Clearly the same word in SB. and C.; *s* = *ch*; see n. 3. Only SB. has the element *-gwa(o)*, seen in CH. *fo-gwa*.

⁹² Observe SB. *e* and C. *i*; also *p-b*; *d-l*.

⁹³ SB. *ekto* = C. *ito-*, probably an aspirate in SB. Cf. n. 26. See Feel. Same element as in SB. *necktozah* 'hear.'

⁹⁴ SB. *atmala* = *at* = 3 p. + *mala* = plural element (see Grammar). The C. *amal* is a less primitive form = *a(f)mala*, pl. of *ati* 'he, it.' *Pela* is cognate with the C. pl. element *ambal*, *ambali* and not with the 2 p. *pe*.

⁹⁵ SB. *mod*, probably = C. *-mei-*.

⁹⁶ *Patparti* in SB. is clearly the same element as in C. *parti-guti*. In SB. it is a description of *atchuo* 'dog,' apparently used here for any small four-footed animal. In C. *imio* = 'eyes' and *partiguat* seems to qualify this noun.

⁹⁷ C. *-gwai* = SB. *-wala*; see n. 3 for SB. *s* = C. *ch*.

⁹⁸ SB.-C. *-ne-* and CH. *-nyn-* are allied to C. *nao* 'go.'

⁹⁹ SB. *ampogua* = an 1 p. + *pogua* 'two'; *umala* 'we,' pl. C. *nen* probably is the reduplication of the 1 p. n. seen in *an*, an = the 1 p. singular. CH. *chie* 'we' contains another stem from SB.-C., but is clearly cognate with CH. *hycha* 'I.'

¹⁰⁰ See n. 24. The ending *-edi* is probably the same as that seen in *machredi* 'man'; *terredi* 'old.'

¹⁰¹ SB. *w-e* = C. *gu-l*; cf. n. 12.

¹⁰² See n. 3 and observe SB. *r* = C. *n*.

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OSAGE MARRIAGE CUSTOMS.

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THE marriage customs of the Osage are clearly defined, well established, and are observed to this day by the full-bloods, although it is understood that the people are now amenable to the laws of the State in which they reside. There are two forms of marriage recognized as legal—one that takes place between a youth and a maiden and is called *Mizhi**, the other, called *Omita*, in which one or both parties had previously been married.

THE MIZHI*

The marriageable age is reached shortly after puberty, and those who have attained that period of life are known as *Tséga no**, "newly grown." These young people, unless near relatives, are not allowed to mingle or even to speak to one another. They are strictly guarded, so that no couple can arrange their own marriage affairs, and open courtship or love-making becomes impossible.

The initiatory steps toward marriage must come from the family of the young man. No one having marriageable daughters can do anything looking to their marriage: they must wait to be sought. It therefore becomes the duty of the parents or other near relatives of the youth to seek for him a suitable wife, who must be chosen from a gens other than the gentes to which the father and the mother of the youth belong.

When a suitable maiden has been found—one who in the opinion of the young man's family would make him a good wife—the parents summon four old men, each of whom has won the title of *Nígka do**he, or Good-man. This title belongs to a man who has been married according to the established customs of the tribe, has successfully raised and married off his own children, and lived to become a grandfather. The *Nígka do**he are employed to conduct the negotiations between the family of the youth and that of

the chosen maiden, and for their services they receive a fee. When the four men present the proposal of marriage, they extol the character of the family of the young man and also that of the young man himself.

There is one point on which every self-respecting family is particular, and that is that the daughter shall marry only into a family the parents of which have been properly united in accordance with the recognized tribal custom. One of the first inquiries made of the four old men by the parents of the girl is upon this subject. When the answers given are satisfactory as to the standing of the youth's family, the next step is the consideration of the number and character of the gifts to be made by the parents of the young man. As all the near relatives of the maiden must each have a gift, it becomes necessary to canvass carefully the amount and value of the gifts offered to insure satisfaction on the part of all entitled to share in them. These negotiations often consume considerable time. When at last this matter is adjusted the four old men are bidden to inform the family of the youth that the relatives of the maiden will be consulted. This form of message is regarded as an assurance to the four men that their mission will be successful.

At this point it is possible for the parents of the girl to reject the proposal, but if they are favorably inclined they now communicate with the maternal uncle and consult with him. If he gives his consent, all the other relatives agree to the proposed marriage. The parents of the maiden send a messenger whose duty it is to convey their consent to the parents of the young man and to announce the time when the ceremony of delivery of the gifts, the maiden, and the young man shall take place. On the appointed day the parents of the young man lead a procession composed of all the relatives of the youth, each one bearing a gift of a horse or a blanket to be distributed among the relatives of the maiden. When all the promised gifts have been delivered to the relatives of the girl and accepted by them, the relatives of the young man return to their homes.

On the following day the parents of the maiden send her, accompanied by a prominent man, to the home of the prospective bride-

groom to be delivered to him and to his parents and relatives. This act is spoken of as the declaration "We give to you our daughter." The bride takes with her gifts of horses and blankets to be distributed among the relatives of the bridegroom. The next morning the relatives of the young man again form a procession and take both bride and groom to the house of the bride's parents and deliver her and her husband to her parents and relatives. This act, which completes the marriage, is equivalent to the declaration by the youth's parents, "We give to you our son."

THE OMHA

The second form of marriage, according to the established custom of the tribe, is called *Omha*; it took place between persons who had previously been married according to the *Mtshi*^a form but who had become separated by divorce or death.

In this form of marriage the man sends messengers to the widow with his offer of marriage, accompanied by gifts consisting of horses and blankets. While the offer of marriage is made direct to the widow, she, wishing to conform as nearly as possible to the *Mtshi*^a form, refers the messengers and the gifts to her parents, if living, or to her nearest relatives, in order that they may decide for her. These relatives consult on the proposal, and if they are satisfied with the negotiations they convey to the messengers their consent and by them send for the man offering himself in marriage. Arriving at the house of the relatives of the woman, he is given a seat beside her, and the marriage is consummated without further ceremony. This form of marriage must be observed by widowed or divorced persons if they are to retain their social position in the tribe and if the man desires to keep in line to win the title of *Nigka do^ahe*, provided he has not already achieved it.

THE GASHON'THE MIGHTHONGE

It sometimes happens that a young man falls in love with a maiden and desires to marry her. Fearing opposition, either by his own parents or by those of the maiden, should he endeavor to marry her openly, he cohabits with her in secret. This is not recognized

as a marriage, but is called *Gasho' the migtho^{ng}e*, which, freely translated, means, a union in the natural state or in disregard of tribal custom. If this act becomes known to the parents or to other near relatives of the young man, they hasten to make the union a marriage by delivering the young man to the maiden and her relatives, with gifts of horses and other valuables, thus making the union equivalent to a marriage in the *Mtshi^a* form.

The living together of a man and woman without first going through the ceremony established by tribal custom is called *Gasho' the migtho^{ng}e*. The title of *Ntka do^ahe* is denied a man who lives with a woman in this manner, and the children issuing from such a union are not regarded as "persons" for the reason that the act of their parents is like that of unthinking animals.

Cohabitation between a man and a woman, whether young or old, in deliberate disregard of tribal custom, is declared to be dangerous to the morals of the young people and to have a tendency to encourage them to defy parental authority.

BUREAU OF AMERICAN ETHNOLOGY
WASHINGTON, D. C.

REMARKS ON RADOSAVLJEVICH'S CRITICAL CONTRIBUTION TO "SCHOOL ANTHROPOLOGY":

By MAURICE FISHBERG

WHEN I read that "Critical Contribution to School Anthropology" in the July-September number of the *American Anthropologist* I recalled that delightful little French comedy *La Poudre aux Yeux* by Labiche. Dr Malingear, and especially his wife Blanche, discovered, even before our own P. T. Barnum, that people like to be humbugged: all you have to do is to throw dust into their eyes and they will believe that you are great, accomplished, rich in worldly goods or in knowledge and attainments. The critic of Professor Boas' work, judging by the extravagant way he uses the pages of the *Anthropologist* and refers to authorities and recklessly quotes them, appears to me to be a contemporary disciple of Dr Malingear. He is satisfied, apparently, that the average reader will be impressed with his immense erudition if he will but note the large number of authorities quoted, whether relevant to the subject under discussion or not, so long as the quotations can serve the purpose of *poudre aux yeux*. If this criticism had appeared in an irresponsible sheet it could under no circumstances be taken seriously by any one interested in the problems concerning the structure of man, or the problem of heredity versus environment as presented by human traits. At most it could contribute to the gaiety of nations. But considering that it has somehow found its way into the *American Anthropologist*, the organ of those who devote their energies to the study of races and racial traits, it may be taken by some as a real demolition of Professor Boas' painstaking work dealing with the effects of the American environment on the physical development of immigrants. Accordingly, I believe

¹ In connection with this paper the reader should consult the article by Dr Robert Lowie, "Dr Radosavljevich's 'Critique' of Professor Boas," in *Science* for April 5, 1912.—EDITOR.

that it is imperative that the lack of fairness of this critic should be pointed out in the pages of the journal in which his criticism appeared. Doubting whether Professor Boas, who is at present away from this country, will deem it wise to take notice of this criticism, I thought it advisable to take the matter up and thus prevent its passing into history unanswered. In doing this I shall simply confine my remarks to the question whether the critic is honest and fair to Professor Boas, and for obvious reasons will leave the theoretical aspects out of consideration.

While reading the article we are at once struck with the fact that the writer had no honesty of purpose, had no intention to be fair with Professor Boas. To begin with, the complete work has not even yet appeared, as I am writing these remarks. A fair critic would undoubtedly have waited until the complete work had made its appearance before attempting to analyze its results, irrespective of whether he agrees with Boas or not. But Radosavljevich has gone a step farther: There have appeared two preliminary reports; the second one, issued about a year ago, is more complete and contains data which are not available in the first report. Radosavljevich has not even taken the trouble to notice the second report, and the result is a painful exhibition of unfairness. Thus he rebukes Boas for not stating the exact number of individuals measured (p. 421), while a glance at the second report would have given him the information he craves. To my mind it is gratuitous to say that Boas has drawn hasty conclusions from comparatively few measurements, and even to hint at fraud by saying "We are told that the measurements include about 30,000 individuals, but in the report are given only," etc. Had he consulted the second report, which was available before his criticism was printed, he would have found details of all the individuals referred to, and also data about races other than Italians and Hebrews, such as Bohemians, Poles, Slovaks, and Hungarians.

It is dishonest to state that thousands of individuals are not sufficient to report on, and to attack the conclusions reached by Boas, asserting that other observers have not arrived at such conclusions while making observations of 100 or 500 individuals, as

Radosavljevich does. Thus he lines up Hoesch-Ernst's 350, Reuter's 373, Landsberger's 104 children measured against Boas' 30,000!

With the proclivities of the average writer of a dissertation for a degree, Radosavljevich is not satisfied with discussing the problem before him: he talks a great deal about everything, but little of the subject investigated by Boas. He occupies eleven pages of valuable space with a discussion of "mechanical-functional," "hereditary," and "geographical-local" theories of head-form: terms which we have not met in anthropological literature. We search further with a view of discovering what he means by these high-sounding words, and find that the "mechanical-functional theory" of Radosavljevich implies that "the shape of the head may be caused by the mechanical influences during postnatal life," and we are none the wiser. To substantiate this theory he quotes Darwin to the effect that habitual spasm of the muscles, and a cicatrix from a severe burn, may modify the facial bones; that shoemakers in pursuing their vocation may acquire prominent foreheads. But when we recall that comparatively few persons in this world are shoemakers and that fewer still have habitual spasms of the muscles, or cicatrices, we wonder what this has to do with the head-shape of the bulk of the population. Moreover, supposing that many had cicatrices and spasms, and worked as cobblers, and that even the vaults of their crania (not alone their faces and foreheads) became deformed, would these deformities be transmitted to their offspring? Students of physical anthropology know of better examples of artificial deformation of the skull, but they do not know that these deformities are transmitted by heredity. I am also at a loss to discover the relevancy of the fact that "about fifty years ago, a German anthropologist, Welcker, found that short men more frequently have rounded heads and tall men elongated heads," with regard to a "mechanical-functional theory." I have looked over Nyström's paper quoted by Radosavljevich to the effect that the shape of the head may change under the "mechanical-functional" influence of diet, but could find nothing of the kind. Similarly the long quotations from Holden's *Osteology* are irrelevant, as are

the references to Cuvier, Görke, Papillault, Haeckel, and Osburn. The claim that "the mechanismus [*sic*] of birth" has a relation to the shape of the head is discussed quite fully by Professor Boas in the very paper criticized, and it is altogether gratuitous to speak of it, even when a critic is doing his best to display erudition.

We also have a discussion of the "first, second and third hereditary theories" of head-form occupying three and a half pages. At the outset we are impressed with the array of well-known *authorities in craniology*, such as Möbius, G. Stanley Hall, Zupanchich, and others equally known for their researches in craniology and archeology. The following interesting item of information is imparted to us: "The history of man in England does not begin 5,000 years ago with an invasion of Celt or of Saxon, but at a period of which 5,000 years is but a small fraction. This theory has recently been advanced also by a Slovenian anthropologist, Zupanchich, in his lecture given at the University of Belgrade." As to what all this has to do with the problem whether the head-form of the immigrants in New York undergoes changes, we are not enlightened. But it serves as dust to be thrown into the eyes of those who may think that there is some redeeming feature in Boas' work.

It is difficult to follow the vast array of names quoted without gasping for breath. But when Radosavljevich speaks of a "national form of the head," on pp. 400 and 401, we are actually bewildered. And when he confides to us that "the average cephalic index of 72.5 is the national type of the head of Englishmen," as well as of the Irish, we have enough for the time being, and we recall the work of the late Dr Beddoe, and the Anthropometric Committee, which has escaped the attention of Radosavljevich, who considers his authority for the anthropology of England one Zupanchich who last year delivered a lecture at Belgrade.

Radosavljevich is not yet prepared to attack the subject under discussion—Boas' work—but takes up nearly three more pages with a discussion of "the geographical-local theory" of head-form, which he frankly tells us "is not unlike the preceding." "It claims that the shape of the head is distributed more according to geographical localities than to nationalities." Those acquainted with Deniker's

excellent maps will be amazed to hear that Deniker attributes the shape of the head of different races to the "geographical-local theory" of Radosavljevich. As an example of the geographical-local influences on the head-form, we are offered the following: "Beddoe in studying 200 boys found that those belonging to the navy have larger heads than those of the reformatory and industrial schools." After having this evidence it would surely be worse than heresy to doubt that "geographical-local theory."

It may be hoped that Radosavljevich's paper does not reach Otto Ammon, because if he reads the résumé of his theory given on page 403 he will find good cause for resentment. The critic does not omit to mention even that great "authority" in physical anthropology, Edmond Demolins, and his notorious book, *A quoi la Supériorité des Anglo-Saxons*, which has immense geographical-local bearings. Finally, to fortify that geographical-local theory we are treated to the following quotation from Topinard's smaller book:

The cephalic index varies in the human races from 71.4 in Greenlanders to 85.63 in Lapps, in the average of the series; and from 62.62 in a New Caledonian to 92.77 in Slav (Wend) in particular instances. The difference is greater if we include the distorted skulls. A scaphocephalus in the Laboratory of Anthropology has an index of 56.33 and a Peruvian skull of an Inca, one of 103.

All this is, of course, quite an interesting bit of information, but what a scaphocephalus has to do with the "geographical-local theory" of head-form, or with Boas' work among the immigrants in New York City, we are at a loss to discover.

With the support of such great anthropological authorities as Zupanchich, Demolins, Möbius, etc., Radosavljevich is now ready to pick up courage to say that it "is not his intention to criticize these more or less different theories." All he wants to know about Boas is, "Did he grasp the difficulties of their (?) theories in shaping his own theory? Is his [Boas'] investigation a progress or regress in experimental physical anthropology in general and school anthropology in particular?" This is what troubles him after he has covered twelve pages and scattered more dust in the eyes of the

readers of the *American Anthropologist* than has ever before been attempted.

But he does actually discuss Boas' investigations, and I regret to say that he does it with less fairness than he displays when speaking of that memorable lecture delivered last year by Zupanchich at Belgrade. As any one who carefully reads Boas' preliminary reports can readily see, *he advances no theories. He merely reports findings.* To call his facts and figures theories, as his critic does, is unfair, to say the least. Moreover, there is not much new in the theoretical aspects of Boas' work. Many anthropologists have previously asserted that the head-form is subject to the influences of environment. That stature is influenced by social, economic, and geographical conditions is an old and well-known fact, and Boas has again confirmed it in a striking manner. Little, if any, evidence has heretofore been brought forward in support of the suggestion that the form of the cranium is not exclusively an ethnic trait, depending only on heredity and uninfluenced by external conditions, such as climate and social and economic conditions. Boas was fortunate in having at his disposal a considerable number of individuals belonging to diverse ethnic stocks, who had recently emigrated from the countries in which they and their forbears had lived for centuries, and settled in a new environment. From the measurements taken under his direction it appears that the descendants of the immigrants show some change in somatic traits, and Boas merely reports in detail on these changes. He deals in his report, as I have said, with findings, with facts, and not with theories, and especially not with ultimate causes. The fact that in the natural sciences, as John Stuart Mill says, a cause is in itself a phenomenon without reference to ultimate causes of anything, is not Boas' fault, to be sure. Under the circumstances it is unfair to throw dust into the eyes, to quote all sorts and conditions of authorities, including Demolins and last year's lecturer, Zupanchich, with a view of ascribing to Boas theories which he never advanced in the publication under consideration.

It is also unfair to attack the staff of men who have done the work under Dr Boas' direction and to refer to them as "scholarly

looking" and "anthropometrical amateurs" (it is curious in this connection to mention that a careful search of anthropological literature for the last twenty years seems to indicate that this is Radosavljevich's maiden effort in this field), and even to look askance at the problem whether the fact that there were thirteen assistants may have had a disastrous effect. To insinuate that these thirteen men were incompetent is the limit of impudence.

Rebuking Boas for not having done the work by himself, Radosavljevich displays a lamentable ignorance of the manner in which most of the great anthropometrical investigations have been conducted. Any one acquainted with anthropological research, and especially measurements of the living, knows that individual work is impracticable, often impossible, and really unnecessary, particularly if we desire to have observations on a large number of individuals. Virchow in Germany, Schimmer in Austria, Körösi in Hungary, and others have entrusted the investigations of the color of the skin, hair, and eyes of school children in those countries to the teachers, who were given explicit directions how to proceed. The Anthropometric Committee in England, Livi in Italy, and Ammon in Baden, had many workers in the field. Indeed, Boas was extremely careful, as is evident from the way he speaks of training his assistants, trying to ascertain their personal equation, and only after finding that the individual differences were comparable did he allow them to proceed with the work.

Radosavljevich rebukes Boas for another omission: he neglected to measure the height of the skull. Well, I recall that last winter Radosavljevich was requested to demonstrate a reliable method of obtaining this very measurement, at a meeting of the American Ethnological Society, and he had to agree that it was a very untrustworthy procedure—this measurement taken twice on the same head gave him a difference of no less than fourteen mm. It is for just this reason that careful anthropologists do not take this measurement, especially when they desire to measure a large number of persons. Indeed, it has not been taken in any great anthropometric investigation. It is usually left for students, who take measurements of a couple of dozen individuals to report them in their theses for the degree of Ph. D.

I am at a loss to account for the rebuke the critic administers to Boas for disregarding Sergi's method of craniology, unless it is again a case of dust in the eyes, because it offered him such a splendid opportunity to use big words—as befits a scholar. Just think of it—ellipsoides, ovoides, pentagonoides, sphenoides, etc. Even tyros in anthropology know that Sergi's method has hardly been taken seriously outside of Italy, and there only by a few of his pupils.

It is a pitiful sight to behold our critic struggling with a mass of second-hand quotations and references. He quite often loses himself in a maze of contradictions, occasionally undoing at the end of a paragraph all he has said at its beginning. Thus on page 427 he takes issue with Boas because he says that the human head becomes slightly longer with increasing age. Apparently with a view of making it appear that this is Boas' first literary and scientific effort, Radosavljevich demands sharply why Boas does not mention the discoverer of that fact, and proceeds forthwith to quote authorities to the contrary, with the following results: Weissenberg found that the cephalic index in the newborn infant is 86.4, then it keeps on decreasing gradually till it drops to 82.4 in the adult; Lucae found a slight decrease in the cephalic index with advancing age; Gray in his Aberdeen Report remarks that "the cephalic index was less in the older than in the younger girls." It is here evident that in his eagerness to display erudition, he quotes against his own case, so long as it gives him an opportunity to mention "authorities."

The unscrupulousness of the critic is evident on almost every page of his paper: In one place he points out that in anthropometric statistics mere averages can not give satisfactory results—"It is a method which has been condemned both in America and in Europe" (p. 408), knowing well that Boas has not relied on mere averages, but has given in detail the seriations of each series, the standard deviation, etc. Further on in his article he changes front and condemns statistics altogether, by saying: "Some biometricians and experimental psychologists make a fetish of figures. Mathematical calculations in anthropometry and experimental psychology, as also in experimental pedagogy, are of fictitious value." But his un-

scrupulousness reaches its limit when he quotes the introductory remarks by Senator Dillingham and attributes them to Professor Boas. On page 5 of the Report which Radosavljevich criticizes, the Immigration Commission says:

One of the best experts on this question, Prof. Franz Boas, of Columbia University, was invited to direct the investigation and was put in general charge. A small appropriation was made to test the question and see if the promise of results was sufficient to warrant the continuance of the investigation. Almost immediately it became evident that there might be much value in such a study, and the work has therefore been continued, although as yet only on a small scale.

Bearing in mind that these words were stated by the chairman of the Immigration Commission, Senator Dillingham, we can appreciate the honesty of Boas' critic when we read the following attributed to Boas:

A small appropriation was made to test the question and see if the promise of results . . .

and basing his opinion on these words, Radosavljevich arrives at the conclusion that "he [Boas] began and finished the investigation in which he was put in general charge without requisite scientific exactness and care."

It is pathetic to behold this novice in anthropology occupying nearly two pages of the *American Anthropologist* telling Boas the exact meaning of the term "cephalic index," enumerating many of the synonyms, and defining it as "a ratio between the width (or breadth) of head and the length of the head." He even deems it advisable to give a long, and then a short, formula for the calculation of this index. That he tells in detail, as befits a teacher, what is meant by the terms dolichocephaly, brachycephaly, etc., goes without saying. His confusion as to what constitutes a long and what constitutes a short head is actually pitiful as any one who can muster the patience to read page 408 of his paper can see.

He stops at nothing in his attempts to discredit Boas' work. On page 405 of his review he says:

On page 32 of his report he [Boas] says that no evidence has been collected which would show an actual change in type due to the direct influence of environment, because the type of immigrants changes from year to year, owing to a selection which is dependent upon the economic conditions of our country, 'far reaching' changes in 'type' which 'can not be ascribed to selection or mixture.'

When we turn to page 32 of the report we do not find anything of the kind stated by Dr Boas. I shall reproduce the three paragraphs of that page in order to show the unfairness of the critic:

According to our knowledge of anthropological conditions in the whole world, the form of the body seems to be the most stable characteristic of any given race or type. Indications have been found, however, showing that under more favorable environment the physical development of a race may improve. This was shown by Gould and Baxter in their investigations of the physical characteristics of the soldiers enlisting during the war of the rebellion, by H. P. Bowditch in his investigations of the development of Boston school children, and by similar investigations carried on at later times in America as well as abroad. No evidence, however, has been collected which would show an actual change in type due to the influence of the environment. Where changes of this kind seem to occur—as, for instance, in a comparison of the types of city population and country population in southern Germany and in Italy—the inclination of observers has been rather to attribute the difference either to the selective elimination of the weaker type or to the immigration of different types.

From a practical point of view it seemed all important to know whether American environment had a favorable or unfavorable effect upon the descendants of immigrants.

The investigation has shown much more than was anticipated. There are not only decided changes in the rate of development of immigrants but there is also a far reaching change in the type—a change which can not be ascribed to selection or mixture, but which can only be explained as due directly to the influence of environment. This conclusion has been tested, and in many different ways, and seems to be amply proved. . . .

Comment is unnecessary for those who read both these quotations. The misrepresentation is flagrant. And we are not surprised at Radosavljevich's proclivity to ascribe to Boas statements which he never made, and hold him responsible for statements made

by Senator Dillingham, as well as for extravagant statements published in a New York magazine.

Radosavljevich's sophistry reaches a degree that is nauseating when he arrives at conclusions, and gives a "general summary" of his results. It is the height of impudence to occupy more than forty pages of a journal, talking all sorts of nonsense, making statements of commonplace matters, authoritatively warning one who has spent his best years in the study of the racial traits of man, as well as the growth of the human body, about the precautions necessary in these studies; nay, even telling him what the cephalic index is, how it is obtained, giving him the formula for its calculation, and then conclude that "his method of collecting scientific data is uncritical" (whatever this may imply) and that "he lacked the requisite scientific exactness and care"! The whole matter would be ridiculous, if so many people did not read only the "general summary" of a paper and rely on the fact that because it has been published in a responsible periodical there is sufficient guaranty that the writer has given ample proof for his conclusions in the text of the paper.

1337 MADISON AVENUE
NEW YORK CITY

ANTHROPOLOGY AT THE WASHINGTON MEETING,
WITH PROCEEDINGS OF THE AMERICAN
ANTHROPOLOGICAL ASSOCIATION FOR 1911

BY GEORGE GRANT MACCURDY

THE annual meeting of the American Anthropological Association was held in the United States National Museum, Washington, D. C., December 27-30, 1911, in affiliation with Section H of the American Association for the Advancement of Science and the American Folk-Lore Society. The attendance was good, and the program exceptionally long and interesting. The most important features were the two symposia: (1) *The Problems of the Unity or Plurality and the Probable Place of Origin of the American Aborigines*, discussed by J. W. Fewkes, A. Hrdlička, W. H. Dall, J. W. Gidley, Austin H. Clark, Paul Bartsch, W. H. Holmes, Alice C. Fletcher, Walter Hough, Stansbury Hagar, A. F. Chamberlain, and R. B. Dixon; and (2) *Culture and Environment*, discussed by J. W. Fewkes, Clark Wissler, Edward Sapir, and Robert H. Lowie. The first of these two discussions is printed in full in this issue of the *American Anthropologist*, and papers devoted to the second will appear in the next issue. Dr Fewkes presided at the six sessions in charge of the American Anthropological Association; also at the single session of the American Folk-Lore Society, in the absence of Prof. Henry M. Belden, President of that society, Prof. George T. Ladd, Vice-President of Section H, was chairman of the single session in charge of the Section. The social functions to which members of the affiliated societies were invited included: a reception by Dr and Mrs Robert S. Woodward at the Carnegie Institution; a reception at the New National Museum; and the reopening of the Corcoran Gallery of Art.

SECTION H

Officers for the Washington meeting were nominated as follows: Member of Council, Dr Aleš Hrdlička; Member of the General

Committee, Dr Charles Peabody. Sectional offices were filled by the nomination, and election by the General Committee, of Dr J. Walter Fewkes, Bureau of American Ethnology, as Vice-President for the ensuing year; Dr Alfred M. Tozzer, member of the Sectional Committee to serve four years (to fill a vacancy); and Dr Pliny E. Goddard, member of the Sectional Committee to serve five years.

AMERICAN ANTHROPOLOGICAL ASSOCIATION

Members of the Council present in addition to President Fewkes were: A. F. Chamberlain, R. B. Dixon, W. C. Farabee, Alice C. Fletcher, P. E. Goddard, G. B. Gordon, C. H. Hawes, F. W. Hodge, W. H. Holmes, W. Hough, A. Hrdlička, B. T. B. Hyde, R. H. Lowie, G. G. MacCurdy, T. Michelson, C. Peabody, P. Radin, E. Sapir, H. I. Smith, H. J. Spinden, A. M. Tozzer, and C. Wissler.

Report of the Secretary.—The Secretary reported that there had been no special meeting of the Association, Council, or Executive Committee since the close of the session in Providence, the proceedings of which had been published in the *American Anthropologist* for January–March, 1911.

During the year death has claimed three members of the Association: David Boyle, a Canadian ethnologist of international repute; Mrs Esther Herrman of New York; and Cornelius E. Rumsey of Riverside, California. Mrs Herrman, whose death occurred on July 4, was one of the founders of Barnard College and of the Hebrew Technical Institute for Boys; also a generous donor to the American Museum of Natural History and the Botanical Gardens in the Bronx.

The annual growth of the Association in membership has been substantial but could be much augmented if all our members would coöperate by sending new names to the Secretary. The names of twenty-eight persons¹ are herewith submitted for election to membership, as follows:

Benjamin Walworth Arnold, C. M. Barbeau, Robert D. Bardwell, Rev. R. J. Briggs, D.D., M.D., Señor Jacinto Jijon y Caamaño, Dr Salvador Debenedetti, Miss Frances Densmore, Rev. F. Ward

¹ Full addresses in the list of members printed elsewhere in this issue.

Denys, William Edmond Gates, W. F. G. Geisse, E. J. Halloran, Newton H. Harding, William Walter Hastings, Charles von Hoffmann, M.D., Louis J. Hopkins, William Barri Kirkham, Señor Carlos Manuel Larrea, Geo. W. A. Luckey, Miss Elizabeth H. Metcalf, Prof. Edward S. Morse, Luther Anderson Norland, John T. Reeder, Jack Shipley, M.D., Joe H. Todd, M.D., University of Pennsylvania Museum, W. D. Wallis, Frederick Adams Woods, M.D., and Jonathan Wright, M.D.

Special attention is called to the amendments to the Constitution which appeared in the last report of the Secretary,¹ but which have not yet been incorporated into a new edition of the Constitution.

The campaign for new members has been kept up with a result, however, hardly commensurate with the cost of the effort. In March the President appointed the Secretary to represent the Association at a meeting of the American Year Book Corporation and to make a report, which is herewith submitted:

A meeting of the American Year Book Corporation was held at the Yale Club, New York City, March 25, 1911. Our President, Dr J. Walter Fewkes, designated me to represent the American Anthropological Association and report at the next meeting of our Council or Executive Committee.

As I had asked Mr Stansbury Hagar to act as alternate, in case of my absence, he also was present at the meeting. There were in fact three successive meetings: (1) of the Directors, (2) of the Year Book Corporation, and (3) of a Conference in which local historical societies were invited to take part. I was present at all three meetings.

The American Year Book Corporation is based on the idea of the coöperation of national learned societies in a common task. The following criteria are to govern conditions of membership:

1. The organizations concerned to be learned societies of every description.
2. The societies must be national in membership, purpose, and scope.
3. None of the societies to be formed for, or actively engaged in, a propaganda for the securing of governmental action of a special or particular kind.

It is a fixed principle that no representative of a society, no member of the Supervisory Board, and no society incurs any financial responsibility through connection with the enterprise. This principle is safeguarded by the form of contract with the publishers (D. Appleton and Co.). The prime purpose of the organization is the publication of the Year Book.

¹ *American Anthropologist*, N. S., XIII, p. 102, 1911.

The present membership of the American Year Book Corporation consists of more than 40 national learned societies. Since the meeting of the American Year Book Corporation, the Managing Editor of the Year Book commissioned me to write the article on "Anthropology, Ethnology, and Prehistoric Archeology," which has been done; and the Year Book for 1911 will appear before the beginning of the new year.

Respectfully submitted,

GEORGE GRANT MACCUDY,
Secretary.

The report of the Secretary was accepted and he was authorized to take the necessary steps toward completing membership of the American Anthropological Association in the American Year Book Corporation.

Report of the Treasurer

The Treasurer's report was received and referred to an auditing committee appointed by President Fewkes. It follows:

RECEIPTS

Balance from 1910.....	\$316.21	
From Anthropological Society of Washington, for <i>Anthropologist</i> :		
Vol. XII, No. 2.....	\$62.16	
Vol. XII, No. 3.....	59.73	
Extra copies and reprints.....	15.18	137.07
From American Ethnological Society, for <i>Anthropologist</i> :		
Vol. XII, No. 3.....	\$62.27	
Vol. XII, No. 4.....	62.85	
Vol. XIII, No. 1.....	63.25	
Vol. XIII, No. 2.....	66.32	
Extra copies.....	4.14	258.83
Annual dues.....	1,235.62	
Annual subscriptions to <i>American Anthropologist</i>	564.20	
Sale of back numbers and extra copies of <i>American Anthropologist</i>	127.08	
Authors' reprints (at cost).....	382.49	
Sale of <i>Memoirs</i>	24.66	
Publication fund.....	170.00	
American Folk-Lore Society:		
Half cost of Bibliography of Periodical Literature for <i>American Anthropologist</i> and <i>Journal of American Folk-Lore</i>	147.64	
TOTAL.....		\$3,383.80

EXPENDITURES

For printing, binding, and mailing	
<i>Anthropologist</i> , Vol. XII, No. 3	\$289.01
Vol. XII, No. 4	596.44
Vol. XIII, No. 1	378.02
Vol. XIII, No. 2	331.27
<i>Memoirs</i> , vol. II, no. 3	102.05
Reprints	375.27 2,102.90
Illustrations	548.01
Editorial expenses ¹	13.50
Treasurer's expenses	147.51
Secretary's expenses	141.32
Returned subscriptions	4.25
TOTAL	3,017.55
BALANCE ON HAND	366.25

B. T. RABBITT HYDE,
Treasurer.

Report of Auditing Committee

Your auditing committee on the accounts of the Treasurer beg to report that the books are correctly stated and the apparent balances are:

Balance Jan. 1, 1911	\$ 316.21	Payments by check	\$3,008.70
Receipts during year	3,067.59	Cash payments	8.85
		Balance in bank	366.25
	3,383.80		3,383.80

The balance in bank January 1, 1912, is probably arrived at by deducting from the apparent balance checks due but not presented.

Respectfully,

WALTER HOUGH,
TRUMAN MICHELSON,
Auditing Committee.

Report of the Editor

During the year four numbers of the *American Anthropologist* have appeared, two of volume 12 and two of volume 13, while the third number of volume 13 is in press. Part 5 of volume II of the *Memoirs* has also been published.

In the first place acknowledgments are due to the former editor, Mr Hodge, who took the entire charge of the *Memoirs*, and who has willingly given the present editor advice and assistance at all times, especially in regard to the illustrations. Secondly I have to thank the Secretary, and Miss H. H. Parsons (Mr Hyde's assistant) for the promptness with which they have answered queries, furnished information, and in general contributed their share to the success of the journal, all the more as I have turned over to them matters which the former editor used to attend to.

¹ The bill for "Editorial expenses" for the year has not yet been received, which accounts for this item being so much smaller than last year.

The present defects in the *American Anthropologist* in my conception spring from two principal causes, (1) delay in publication and (2) an insufficient editorial staff. In the last five months, however, there has been a great improvement in respect to the first of these causes, but the absence of the editor from Washington and certain other causes have prevented us from reaping the full benefit of the change.

The make-up of the editorial staff is the next matter to which I wish to call attention. No one who has not had something to do with editorial work can realize how much labor Mr Hodge took upon his shoulders in conducting the journal single-handed. His work comprised the reading and proofreading of long articles; correspondence with authors, the assignment, reading, and proofreading of reviews, and the collection of news items, besides the entire editing of the *Memoirs*, and most of the business management of the *American Anthropologist* and the *Memoirs*. In other words, he combined the duties of business manager, editor-in-chief, literary editor, and assistant editors. If there be another who can satisfactorily perform all of these functions he is the logical man for the position of editor. I am inclined to think, however, that the time has come when it will be inexpedient, even if it is possible, to continue all of these offices under one man.

In the first place a plan is already on foot to place the literary, *i. e.*, review sections, of both the *American Anthropologist* and the *Journal of American Folk-Lore* in charge of a separate board of editors, and have the reviews and notices of periodical literature appear as a separate publication. Under the present system in the *American Anthropologist* any book that happens to be sent in is assigned to some one, and if he accepts the request to review, the book is sent him. Usually a review is forthcoming in course of time, but there are cases in which no reviews have been furnished, although the book has been for two years in the hands of the person who had agreed to review it. The books are furnished for review, and it is manifestly unjust to those who furnish them not to supply some sort of notice. Another set of reviews is furnished by certain anthropologists voluntarily, and the editors have been under great obligations to several gentlemen in this way. This method of obtaining reviews, however, gives an uneven result. Certain works, or certain branches of anthropology, are well noticed, while others are entirely neglected. Books sent in and assigned should be followed up and either reviews should be obtained or the books withdrawn and sent to other students who will review them. All books received should be kept on a check list so that it will be known when such and such a work came in, to whom it was assigned, and when the reviews were furnished. I might add that we ought to be particularly prompt with books furnished by commercial houses whose sales are supposed to be largest immediately after the appearance of the work. Moreover, significant anthropological works should be reviewed no matter whether any copy is received for review or whether or not anyone volunteers such a review. Under the present system it is impossible for either the editor of the *Journal of American Folk-Lore* or the editor of the *American Anthropologist* to spend sufficient time to do all of this along with his other duties. For

this reason I wish to add my recommendation to that of the editor of the Folk-Lore journal that the reviews and periodical literature of the two journals be incorporated into a separate publication under its own corps of editors. If for any reason it should not be considered wise to make this publication separate, still it ought certainly to be conducted as a distinct department of the other journals. The remainder of the journal, or the *American Anthropologist* proper, should be under the editorship of some person whose headquarters have some stability and who can be in close touch with the printers, the illustrators, and the contributors, and who has other facilities for making up the journal. This editor-in-chief could make very good use of two or three associate or assistant editors to handle the Miscellanea and assist him with extra duties, such as the *Memoirs*. The present associate editor has assisted me materially with the Miscellanea, but one or two additional men would be in no way amiss. We need particularly to increase any news and notes from foreign publications. Possibly it might be best to select assistant editors to cover the different departments of Anthropology. However, it is important to remember that the success of any scheme depends on the willingness to work of those who are selected for certain positions, rather than the desirability of the scheme abstractly considered. One man who will really do something is better than a dozen ornamental editors, even if his scientific caliber is inferior.

I have now laid before you the present, to me unsatisfactory, condition of affairs, and await your action. I feel that a journal like the *American Anthropologist* should not be edited from a trunk or a hall bedroom, and am only too well aware how the delay in publication to which this kind of editing contributes brings about haste, and opens the door for errors which a more leisurely method of composition would prevent.

Respectfully submitted,

JOHN R. SWANTON.

The Editor's report was accepted.

The Council authorized the Secretary to insert a notice in No. 3 of the *American Anthropologist* for 1911 to the effect that all authors shall be given three months from issuance of said notice in which to call for cuts used in illustrating their papers, the carriage of the same to be paid for by the authors. After expiration of the said three months The New Era Printing Company may destroy all cuts not called for that were used in illustrating the *American Anthropologist* prior to no. 3 of 1911. On motion the Secretary was also instructed to notify The New Era Printing Company to return to authors, at the expense of the latter, all cuts beginning with no. 4 of the *American Anthropologist* for 1911.

The Committee on Editorial Management appointed by President Fewkes reported as follows:

Your committee has considered the question of the desirability of issuing a journal of anthropological literature to include a summary of the periodical literature of the world and reviews of books bearing on the subject of Anthropology, and beg to submit the following recommendations:

1. That a journal, to be issued quarterly, and to be devoted to the subject above mentioned, be published during the year 1912 under the joint auspices of the American Anthropological Association and the American Folk-Lore Society, provided the latter society desires to enter into this coöperative plan.

2. That the expense of publication be borne proportionally by the two societies, based on the membership of each, and that in cases where a member of one society is also a member of the other, the cost of the copies to which such members are entitled shall be borne equally by the two societies.

3. That Dr Alexander F. Chamberlain be appointed Editor of the proposed journal on the part of the American Anthropological Association, and that the American Folk-Lore Society be requested to make a similar appointment in its own behalf. In this connection it is further recommended that it be the policy of the American Anthropological Association that the reviews of books submitted to it be assigned to as many members of the Association as practicable in order that the scope of the proposed journal may be as wide and the reviews as varied as possible.

4. That the details of distribution be determined by the Secretary of the American Anthropological Association and the Secretary of the American Folk-Lore Society, serving as a permanent joint committee with power to act in all emergencies, and that they determine the method of payment of the expenses of the proposed journal as they are incurred.

5. That the name of the proposed periodical shall be "Current Anthropological Literature."

Respectfully submitted.

F. W. HODGE, *Chairman*,
CHARLES PEABODY,
CLARK WISSLER, *Committee*.

Additional Report.—Your committee has considered the proposal respecting the appointment of an editorial board in connection with the publications of the Association and beg to report that in its judgment such a plan would not be feasible, since concentration of authority in an Editor and an Associate Editor would, it is believed, better subserve the interests of the publications. Moreover, these officers may always exercise the privilege of submitting to members of the Committee on Publication, or to other members of the Association, any questions regarding the desirability of publishing articles submitted to them, thus obviating the need of the editorial board suggested.

Respectfully submitted.

F. W. HODGE, *Chairman*.

The two foregoing reports were adopted and the committee discharged. The American Folk-Lore Society approved the recommendations of the committee and thus becomes a party to the plan for publishing "Current Anthropological Literature" for 1912.

One of the chief functions of the Association is publication; the choice of an editor is therefore of prime importance. For twelve years Mr F. W. Hodge filled this position with rare ability and without financial compensation. One year ago he declined reelection, and Dr John R. Swanton, his associate, was promoted to the editorship. But Dr Swanton's duties as field ethnologist seriously conflict with his work as editor. At the end of one year's service the Association has heeded his request to look elsewhere for its editor. At this critical juncture our Treasurer, Mr B. T. Babbitt Hyde, simplified the search as well as the process of selection by notifying President Fewkes that he was in a position to guarantee the editorial expenses of the *American Anthropologist* for five years, conditional on the acceptance by Mr Hodge of the position of Editor.

Mr Hyde's generous and timely action not only guarantees a material reward for excellent and faithful service but also marks the beginning of a new era of usefulness for the Association. He has the thanks of all its members voiced in a letter from its President:

WASHINGTON, D. C., January 9, 1912.

Dear Sir:

Mr Hodge has been unanimously elected Editor of the *American Anthropologist* and has accepted the position under the terms mentioned in your telegram. It is universally recognized that under his direction the high standard of the *Anthropologist* due to him in the past will be maintained. Your aid has made this possible.

I regard it an honor to send you the thanks of the American Anthropological Association for your great generosity.

Will you convey our thanks also to all those who have contributed with you to bring about this result?

I have the honor to remain,

Very cordially yours,

J. WALTER FEWKES, *President*.

MR B. T. B. HYDE, 11 Broadway, New York City.

The question of domestic and foreign exchanges was left in the hands of the editorial staff.

Prof. R. B. Dixon and Dr George B. Gordon were appointed to represent the American Anthropological Association on the Council of the American Association for the Advancement of Science.

On motion of the Secretary, the President appointed a Committee on Consolidation composed of three members from the American Anthropological Association: G. G. MacCurdy (chairman), P. E. Goddard, and B. T. B. Hyde; and three members from the American Folk-Lore Society: Charles Peabody (chairman), Clark Wissler, and Stansbury Hagar. This joint committee will formulate the plans for the consolidation of the two societies and report at the next annual meeting, which will be at Cleveland, Ohio, beginning December 30, 1912, in affiliation with Section H of the American Association for the Advancement of Science.

The President appointed a Committee on Nominations consisting of G. G. MacCurdy (chairman), W. H. Holmes, and A. M. Tozzer. The report of this committee was accepted, the election resulting as follows:

President: J. Walter Fewkes, Bureau of American Ethnology.

Vice-President, 1912: R. B. Dixon, Harvard University.

Vice-President, 1913: George B. Gordon, University of Pennsylvania.

Vice-President, 1914: George A. Dorsey, Field Museum of Natural History.

Vice-President, 1915: Alexander F. Chamberlain, Clark University.

Secretary: George Grant MacCurdy, Yale University.

Treasurer: B. T. B. Hyde, New York.

Editor: F. W. Hodge, Bureau of American Ethnology.

Associate Editors: John R. Swanton and Robert H. Lowie.

Editors of "Current Anthropological Literature": Alexander F. Chamberlain and Robert H. Lowie.

Executive Committee: The President, Secretary, Treasurer, Editor (ex-officio), and W. H. Holmes, Charles Peabody, and Pliny E. Goddard.

Council: W. J. McGee, F. W. Pufnam, F. Boas, W. H. Holmes, J. W. Fewkes, A. F. Chamberlain, R. B. Dixon, G. B. Gordon, G. A.

Dorsey, G. G. MacCurdy, B. T. B. Hyde, F. W. Hodge (ex-officio); H. I. Smith, G. H. Pepper, W. C. Farabee, J. R. Swanton, G. G. Heye, H. J. Spinden, T. T. Waterman (1912); W. C. Mills, H. Montgomery, C. B. Moore, W. K. Moorehead, C. Peabody, C. C. Willoughby, P. E. Goddard, T. Michelson (1913); Alice C. Fletcher, C. P. Bowditch, S. Culin, R. H. Lowie, C. Wissler, C. H. Hawes, E. Sapir, P. Radin (1914); A. E. Jenks, S. A. Barrett, W. Hough, A. Hrdlička, A. L. Kroeber, A. M. Tozzer, F. G. Speck, A. A. Goldenweiser (1915).

The incoming President, Dr J. Walter Fewkes, has appointed the following committees:

Committee on Meetings and Program: G. G. MacCurdy (chairman), W. H. Holmes, Alice C. Fletcher, R. B. Dixon, A. M. Tozzer, F. W. Hodge, W. C. Mills, R. H. Lowie, A. Hrdlička, E. Sapir.

Committee on Finance: B. T. B. Hyde (chairman), G. G. MacCurdy, W. H. Furness, 3d, George G. Heye, Clarence B. Moore, C. P. Bowditch.

Committee on Publication: The names of the members of this committee appear on the third page of the cover of this number of the *American Anthropologist*.

Committee on Policy: Alice C. Fletcher (chairman), W. J. McGee, F. W. Putnam, F. Boas, W. H. Holmes, A. L. Kroeber, G. B. Gordon.

Committee on American Archeological Nomenclature: C. Peabody (chairman), W. K. Moorehead, H. I. Smith, Walter Hough.

Committee on the Concordance of American Mythologies: F. Boas (chairman), J. R. Swanton, A. L. Kroeber, R. B. Dixon.

Committee on Nomenclature of Indian Linguistic Families North of Mexico: F. W. Hodge (chairman), F. Boas, A. L. Kroeber, R. B. Dixon, J. R. Swanton, J. Mooney, A. F. Chamberlain, E. Sapir.

Committee on the Preservation of American Antiquities: W. H. Holmes (chairman), E. L. Hewett (secretary), F. W. Putnam, J. Walter Fewkes, Alice C. Fletcher, F. W. Hodge, G. B. Gordon, G. G. MacCurdy, S. Culin, W. C. Mills, S. Hagar.

President Fewkes opened the first public session of the joint meeting with the following remarks:

Ladies and Gentlemen; Members of the American Anthropological Association:

A year has passed since the last meeting of the Association and we have now again come together, bringing from field and laboratory new material to lay before our fellow-workers for their critical examination. It is eminently fitting that we should hold our service in this beautiful building erected by the nation to contain the precious collections gathered from the uttermost parts of the earth as well as our own country. Part of these collections illustrate the physical and cultural history of man, the sciences we cultivate. Our place of meeting should stimulate us with a new enthusiasm and a high ideal of research, and the time of year a new sense of the service to humanity it requires. Although our science has a very practical side, its strength lies primarily in the study of truth for its own sake and thereby the elevation of human character. With your assistance it shall be our effort to eliminate, as far as possible, all personal feeling in our discussions and keep continually in mind the noble ideal that all our work is a service to science.

It has seemed desirable to group our communications in such a way that discussions of methods and principles would be a prominent feature, and it is earnestly hoped that these discussions may be untrammelled by personal feeling, critical when necessary, but always on the highest possible plane. It is evident to all that with so many speakers, all of whom we desire to hear, it may be necessary sometimes for a speaker to curtail his remarks to conform to the time allowed by the committee. Although in such condensation he may feel that he cannot do himself full justice, it is to be hoped that he will make the sacrifice for the sake of others who follow.

ADDRESSES AND PAPERS

The address of retiring Vice-President Roland B. Dixon of Section H on The Independence of the Culture of the American Indian is printed in *Science* of January 12, 1912.

In the absence of President Henry M. Belden of the American Folk-Lore Society, his address on Folk Poetry in America was read by Dr Charles Peabody.

Many of the important papers read at the joint meeting are represented in this report by abstracts. These are:

Investigations among the Plains Indians: Clark Wissler

A preliminary statement of the general plan for work by the American Museum of Natural History among the Northern Plains tribes and the Southwestern Indians was presented in brief, followed by a general comparative résumé of the results in the Northern Plains. Attention was called to recent evidence of the former use of pottery by the Blackfoot Indians and its apparent similarity

in type to that used by the Menomini and the Saulteaux. The chief discussion, however, was confined to ceremonial bundles of the Blackfoot, special attention being called to the great uniformity of structure in the rituals belonging to the same, suggesting that all had a common origin. Certain striking similarities to Pawnee rituals were pointed out as well as correspondence with the Cheyenne. It was noted, however, that the Blackfoot bundles seem to be of a distinct type as opposed to those of the Menomini, Winnebago, Osage, Sauk and Fox, etc. The individuality of the Blackfoot bundle scheme is shown in the peculiar transfer conception by which a bundle may pass from one person to another without restriction. There was also an investment feature in the transfer, that is, while considerable property changed hands when the bundle was secured, the owner could at any time secure an equivalent return by transferring the bundle to another. The transfer-investment character of Blackfoot rituals has not so far been reported among other tribes and may remain tentatively as a Blackfoot characteristic.

The Principle of Convergence in Ethnology: Robert H. Lowie¹

Dr Graebner in his *Methode der Ethnologie* denies that the principle of independent development is logically on a par with that of historical connection in the explanation of resemblances. He also regards convergent evolution as involving assumptions as to a mystical psychological unity of mankind. Neither of these views is justified. More especially, the apparent mysticism in the doctrine of convergence disappears at once if the supposed identities are recognized not as ethnological realities, but as logical abstractions; not as homologies, but as analogies.

Notes on the Material Culture of the Rio Grande Pueblos:

Herbert J. Spinden

The cultural conditions found in the Southwest may be explained by divergent evolution due to a different economic use of the land.

¹Dr. Lowie's paper on Problems in the Ethnology of the Crow and Village Indians, also presented at the meeting, is published in this issue of the *American Anthropologist*.

The aridity acted as a natural barrier against a people in the hunting stage becoming one in the agricultural stage. The change could be accomplished only by coöperation in the building of irrigation ditches, etc., and by corresponding changes in the habits of life.

The nomadic tribes used the soil extensively; they gathered natural fruits and followed the chase. The sedentary tribes used the soil intensively: they irrigated the soil, built permanent villages, and cultivated the household arts of weaving and pottery making. The minor features of material culture show the fundamental bond between the sedentary Indians of the Southwest and the nomadic Indians of the Plains and Plateau. The following rough classification of the arts may be of interest:

Arts largely resulting from the change to sedentary life: Architecture; pottery; weaving; decorative symbolism; use of white clay in cleaning deerskin; rattles of deer hoof, etc.; use of heart line in realistic art; occurrence of horned and plumed serpents in realistic art; use of sand paintings.

Features of extremely wide distribution not given in the above list: Coiled basketry; bags or cloths of yucca fiber, Indian hemp, etc.; fire drills and pump drills; tubular pipes; grooved stone axes, arrow-heads, etc.; flageolets, flutes, drums, tambourines, etc.

Features that are probably of southern origin: Metates; compound arrows with reed shafts; corn and other agricultural products; details in textiles and ceramics.

Features suggesting connections with the Plains and Plateau: Buffalo shields and covers; war whistles; scalping knives; war lances and other regalia; deerskin shirts and leggings; porcupine quill decoration; decoration of deerskin by perforation; buffalo and elk hide blankets with decorated strip; rabbit-skin blankets; war-bonnets; sinew-backed and horn bows; double quiver with separate bow and arrow cases; grooved arrow rasps and polishers; flint flakes of bone; perforated arrow straighteners; self arrows with blood grooves and painted rings; wickerwork carrying baskets built on a foundation of two crossed sticks; fish trap made by converging walls and willow mat; mats of sewn tule; saddle made of two long narrow cushions; skin-dressing tools; use of brains in tanning.

Some Aspects of the Negro Problem: Albert Ernest Jenks

Immigration.—Since we have a serious negro problem, is it reasonable that this problem be made more difficult by admission into the United States each year of an increasing number of un-Americanized immigrant alien negroes?

There are no United States laws against such immigration. Just short of 40,000 such persons have come to this country in the last ten years; in 1911 we received 6,721. They come from near at hand—three-fourths coming from the West Indies. The West Indies have nearly 6,000,000 negroes, any of whom may come to the United States. America debar Oriental peoples, not because they are inferior, but because they and their culture are so different from American people and their culture. For the same reason we should exclude the "African Black." He should also be excluded because his admission is unfair to the white and also to the negro American, since he makes even more difficult one of America's most perplexing problems.

Miscegenation.—There are two forms of negro-white miscegenation: (1) Legal marriage, permitted in twenty-three states where the unions are largely between negro men and white women; (2) illegal, more or less temporary unions, usually between white men and negro women. Investigation in a certain area shows that 65 per cent of the white wives of negro men are foreign-born girls—usually of Teutonic peoples. Over two per cent of children are born to these marriages. The result of both these forms of miscegenation is an increasing number of mulattoes cemented by color and prejudice to the negro race, while by inheritance they are endowed to a considerable degree with Anglo-Saxon initiative, will, ideals, and desire for fair play—which, because of their color, they can seldom get. These mulattoes are the migrants in the north and west of the United States; they are more migrant than the restless, foot-free white American. The mulatto is the chief factor in the negro problem; the problem is bound to increase, then, in geographic area, in number of discontented negroes, and in its intensity, hand in hand with the increased flow of Anglo-

Saxon blood into the veins of this new American man. All forms of miscegenation between the two races should be made a felony, and the father of children born to one white and one negro parent should be held to support and educate such children.

Who is a Negro?—The negro should be defined uniformly, so that there would be no question of the legal and racial status of any given person, no matter in what commonwealth he may be. To-day there is no such uniformity of laws.

Murderous Race Riots.—The white man's passion against the offending, or suspected, negro is often nothing short of blood vengeance against the negro race. This is seen in the fact that assault against the virtue of a white woman is only one of some three dozen offences for which negroes are annually lynched. In many of these lynchings and burnings murder is not committed in the frenzy of the moment; the mob starts out to lynch or burn—the crime is pre-meditated. If America is to train her annual armies of immigrant recruits into law-respecting and law-abiding citizens, she must punish to the limit necessary all participants in murderous race riots.

Education.—Each negro child should have, so far as public and private school are concerned, an equal opportunity with the white child to make of himself all that he is capable of being.

Investigation.—A commission should be selected to study every aspect of the negro problem. This commission might well be financed by private funds so as to keep it from the almost certain bias of politics and sectionalism.

*Presentation of Specimens of Eolithic Form from Salinelles (Gard),
France: Charles Peabody*

Dr Marignan (Hérault) recently discovered chipped flints, which he considers to be eoliths. In spite of their localization the specimens are eoliths in facies probably rather than in actual age. Noteworthy is a series of discoidal hammers. The natural fractures of the flint and the outlines of the stones were carefully noted and compared with specimens from the Kent Plateau, Boncelles, etc.

Cacimbas of the Isle of Pines (Cuba): J. Walter Fewkes

The word "cacimba," varying in form, apparently found in several linguistic stocks, is widely spread in aboriginal Latin America, from the Andes in South America to the Greater Antilles. It is supposed by most linguists and by natives generally to be a purely aboriginal term signifying a receptacle, or, in a slightly changed form, possibly another word, a pipe. In the Isle of Pines it is applied to a hill with reservoir-like depressions, and to a landing place called Embocadero de los Cacimbas, near Sigüenza bay, but mainly to certain artificial, subterranean, vase-shaped receptacles occurring in various localities. The cacimbas are always constructed under ground, where they are either cut out of the solid rock or built of rude masonry. In a few instances the lower portion is excavated and the upper portion or neck is formed of a wall of undressed stone.

About thirty of these structures were examined in various localities in the Isle of Pines, others being reported from the south coast of the western end of Cuba. They occur near to or far from the banks of rivers, some distance from the seashore, in woods or open fields, singly or in clusters. The largest number was found near Nueva Gerona and Santa Fé, the latter situated in the middle of the island, where considerable quantities of turpentine were once made, as indicated by remains of ovens of undoubted Spanish manufacture. Isle of Pines cacimbas are accompanied, especially where the surface of the ground has not been greatly disturbed, by low, circular mounds, depressed in the middle but with raised rims varying from twenty to thirty feet in diameter, situated about the same distance away and overgrown with *guano prieto* or black-bark, palmettos, and underbrush. The cacimbas average about five feet in depth and four feet in greatest diameter, and the narrowed, neck-like entrance, the rim of which is sometimes elevated a foot above the surface, has an orifice large enough to admit a man. Their inner surface is generally smooth-plastered and blackened, the mortar in which the stones are laid being black, as if impregnated with tar. The floor is flat, circular, sloping slightly to the center, where, in one instance, there is a groove connecting with a covered trench

which opens on the hillside. A thin layer of tar was found covering the floors of several of these structures. When the cacimbas were cleaned out they were discovered to be about half full of rubbish, damp soil, decaying leaves, and other débris. No aboriginal implements or human bones occur in any of them, but there were in one a few fragments of Spanish pottery, the broken jaw of a domestic hog, with other animal skeletal remains. The moist earth in some cacimbas is a favorite habitation for the Cuban crayfish, many specimens of which were taken from one of them near Mr Allnut's home, a short distance from Nueva Gerona. Trenches dug diametrically across the adjacent mounds revealed black layers containing ashes and charcoal, with fragments of tar just below the humus, but no walls or aboriginal objects were observed in these mounds.

The cacimbas of Isle of Pines are almost always and without hesitation ascribed by the natives to the Indians. It is sometimes held that they were constructed by Caribs as storage places for tar and other supplies, as their name implies, and one intelligent person affirmed that the builders were Indians who worked under Spanish direction. It is claimed by others that they were made by white men and were used as receptacles for turpentine, the neighboring mounds being the places where this substance was manufactured. One of those who held this opinion claimed that pine logs were so laid on the mound that their ends were brought to the center and the application of heat caused tar to ooze from them into a pan or small receptacle, from which it was transferred to the cacimba. No reliable data that would prove or disprove any of the current theories were obtainable, but it is certainly strange, if these structures are of Indian manufacture, that no aboriginal objects or implements were ever found with them. Under the circumstances their origin remains one of the unsolved problems of the West Indian culture-history. However, the opinion of an intelligent native of advanced years, who claimed that he was a descendant of one of the Comarco Indians of the Isle of Pines, is worth recording. He said that he had been told by his father, who came from Camaguey, that the cacimbas were constructed by Indians and that he had

never heard that white men made them or used them as turpentine receptacles. Two cacimbas, situated about three miles from Nueva Gerona, where the road to El Bobo forks, sending a branch to McKinley, are called Cueva de los Indios, although there is no cave in the vicinity.

The morphological resemblance of the cacimbas to the chultunes of Guatemala and Yucatan is close. Cacimbas are ordinarily smaller and differ from chultunes in not containing aboriginal objects. If the structures are Indian and pre-Columbian, of which there is doubt, this unique fact is significant as being the only resemblance thus far found in the antiquities of western Cuba and the neighboring peninsula of Yucatan. No evidence can be presented to indicate that they are related to the cave men of Cuba or to those Indians whose skeletal remains were found in the Cueva de los Indios near Nueva Gerona.

The Chultunes of Northern Guatemala: Alfred M. Tozzer

The subterranean, cistern-like reservoirs, called *chultunes*, of northern Yucatan, as described by Mr E. H. Thompson in his paper on "The Chultunes of Labna," seem to have been intended primarily for the storage of water. They are found in most cases in regions where there are no natural sink-holes or cenotes or other available source of water. In a few cases they may have been used as burial places.

In northern Guatemala the country is well watered and there is little need of cisterns for the storage of rain water. The chultunes, however, are far more frequent than in the peninsula to the north. A large number were mapped along the route taken by the Peabody Museum Expedition of 1909-1910. They seem to stretch in long lines connecting the various ruined centers in this region. In addition, several were found in close proximity to the cities themselves.

The chultunes of this region are of two types, the simple, cistern-like, subterranean chamber similar to those in the north, and the lateral-chambered chultun. This second type is met with far more frequently than the first, and consists of a room excavated out of the rock and opening from the bottom of the shaft.

From the fact that these chultunes occur in many places where there is an abundant supply of water, it may be argued that the storage of water is not the primary object of these subterranean rooms. Some were no doubt used as burial places. From a large lateral-chambered chultun at Yaloch a large collection of excellent Maya pottery has been taken. From the manner of occurrence it seems probable that there was a burial here on the floor of the chamber, although no bones of any kind were found still existing in the three feet of earth which had been deposited in the chamber. Three examples of a tall bottomless type of vase were found which are unique. Covers to jars were also common.

Chultunes were also excavated at Chorro, Nakum, and Holmul. From the large number of extensive groups of ruins in this area, and the hundreds of small mounds and chultunes connecting these centers with one another, together with the examples of pottery from this region, it may be seen that here in northern Guatemala we have perhaps the most important center of the Maya culture.

The Mexican Maize Season in the Codex Fejérváry-Mayer:
Stansbury Hagar

On sheets 33 and 34 of the Codex Fejérváry-Mayer (Loubat edition) are two series of symbols including four paintings on each page, two above, two below. The four upper symbols, reading from right to left in the usual manner, picture the maturing of the maize crop during a period of four months; the lower symbols represent the deities governing the months mentioned. But the writer has presented evidence in a previous paper on the Elements of the Maya and Mexican Zodiacs¹ that this sequence of deities also represents the zodiacal signs Cancer, Leo, Virgo, and Libra. These signs correspond with the months July, August, September, and October, which correctly represent the maize season described on the Mexican plateau.

The People of Sandao-a: Elizabeth H. Metcalf

In the extreme southern part of Mindanao, the most southerly and largest of the Philippine islands, on the foothills of the beautiful

¹ 16th Internat. Cong. of Americanists, pp. 277 et seq.

volcano which the Spaniards call "Apo" (The Grandfather), live the Bagobos, a pagan tribe of high mentality, docile nature, spectacular in dress, and in some respects very primitive. They call the volcano "Sandao-a" (pronounced Sandowa), "The Sulphurous One." These Bagobos are a mountain people, and to a certain extent nomadic. They understand only the cultivation of mountain rice; and as this necessitates the cutting of a new bit of forest each year for their rice plantation, they are likely to move also each year into the vicinity of the new rice field. Recently they have been brought together into villages by Government order. Although the American arrangement of the tribal wards somewhat curtails the political power of the present head *dato*, he is still highly esteemed by both natives and Americans.

Formerly the wealth of the people was in slaves, animals, *aguns*, and fine clothes. The days of slavery are past; the aguns, or big gongs, they still possess. These are their most important musical instruments; and the magnificence of tone coloring of many large gongs played together is indescribable. The Bagobos have other instruments of percussion, wind, and strings, but these large gongs serve also as a medium of exchange, and a man's wealth is usually reckoned by the number of gongs he possesses.

Their clothes are made from hemp fiber, which the people weave into a cloth, unique in manufacture, and which lends itself admirably to the artistic fashion of ornamentation employed by these people. Of the old embroidery of cross-stitch on coarse Chinese cotton cloth, which the women understood fifty or more years ago, there are still a few samples to be found; but the present style of ornamentation consists of an appliqué in various forms of bright-colored cloth, of embroidery, of beads and tiny pearl disks sewn on in designs. The beads the people purchase from the Chinese merchants, the pearl disks are made from shells, found farther back in the mountains by another tribe living there.

The houses are always built up from the ground—sometimes of bamboo prepared in various ways, sometimes with the frame of wood with the leaves of certain trees laid on thickly for the roof and more openly for the sides. The entrance to the house is by

a notched stick or by a ladder, and the furniture is exceedingly simple. A peculiar feature, especially of the houses of the aristocrats, is the different floor levels. At the extreme end of the house, opposite the door, the floor is often raised from six inches to three feet, and the whole width of the house. This place is for guests and for the heads of the family. I have seen a house of an important old dato with three floor levels; on the highest level only the old dato and his wife and such persons as they might bid could come.

The fireplace is usually near the door, with bamboo tubes of water standing on end nearby; the better class have bamboo frames of various kinds for holding dishes, and always in its proper place in every house, even the poorest, is the *tambara*, the little bowl containing the usual offerings, the simplest form of house altar. The greatest of their altars, the *patanon*, or war altar, is also a house altar. The erection of this altar is allowed to only a very few high datos, and is connected with their most important festival, which occurs sometime during rice planting. The most significant ceremonies formerly attended this festival, which might last from two days to two weeks; but as in other regions of the earth, so here, the incoming of commerce and civilization kills the ancient culture and it is probable that if given at all in its entirety it is only in the remote regions of the mountains that this great festival of the *Ginum* is now observed with all its elaborate ceremonies. The Bagobos have other altars for different places and different occasions; altars for the planting of their corn or rice; for the cutting of their crops; and very often they place an altar with their offerings near a great tree or a beautiful spring or running water, especially if the water is to be used for any ceremony of purification.

*A Note on the Personification of Fatigue among the Nez Percés,
Kutenai, and other Tribes:* Alexander F. Chamberlain

In common with other authorities, Dr Paul Ehrenreich, in his recent volume, *Allgemeine Mythologie* (Leipzig, 1910), takes the view (p. 159) that personifications of abstract ideas, etc., are of little mythological significance, being almost entirely of cultural or ceremonial import. Such personifications as do exist he regards as

not primarily personifications of such qualities, but originally representations of lunar personalities, as, e. g., in the cases of the Greek Hermes-Autolykos (gambling and pleasure) and the gambling-deities of certain North American Indians. According to Ehrenreich, the hunting gods are "not really personifications of the hunt, but almost always the moon god, or at least beings furnished with lunar traits" (p. 160). But this is going too far in the way of panlunarism.

Among interesting personifications of abstract qualities among the North American Indians are *sleep* among the Ojibwa (Schoolcraft) and *hunger* among the Shuswap (Teit). Another case is that of *fatigue* among the Nez Percés and the Kutenai.

As Bartels (*Medicin d. Naturv.*, Leipzig, 1893) notes (p. 235), citing Bancroft (*Native Races*, vol. 1, p. 284), among the Nez Percés there was a ceremony participated in annually by all the males of the tribe between the ages of 18 and 40. The ceremony, which lasted from three to five days, had as its most noticeable element the pushing of willow rods down the throat into the stomach, this being followed by hot and cold baths and fasting. The firm opinion of the Indians is that they thereby obtain great bodily strength and power of resistance to fatigue. The ceremony is held in order to overcome *Mawish*, the spirit of fatigue. This is the Nez Percé "spring-medicine," reported on recently by Dr Spinden. There are certain identities and resemblances in Kutenai and Nez Percé mythology, etc., that deserve careful study (one curious item is the presence in each of a character with *one leg*). *Mawish*, of course, is the Chinook jargon word for animal (e. g., deer), and the deer figures prominently in the dances, etc., of the Kutenai.

Initial and Terminal Formulæ of Kutenai Tales:

Alexander F. Chamberlain.

Although, in the adverb *pik'áks*, the Kutenai language has a word corresponding to our "long ago," "once upon a time," etc., so familiar as an initial formula in the tales and legends of many lands, this term does not appear as the customary beginning of such stories as have been recorded in the native text.

In narration the Kutenai employs the "historic present," as the grammarians term it, adding thus to the vividness of the story told. The great majority of the tales begin with a verb in the present tense, therefore, not with such a phrase as our "once upon a time," with its verb in the past tense. Examples of Kutenai initial formulæ are:

- Kānaquē Skinkūts*, Coyote is traveling.
Kānaquē tlāntlā, Grizzly-Bear is traveling.
Kāusākā'ne Wōlak, Frog is there.
Kōnitlāinē Skinkūts, Coyote is in his house.
Kōnitlāinē G'ōsāts, Chipmunk is in his house.
Tsināgē Skinkūts, Coyote sets out (starts off).
Kāktlūnām'nē, There is a village.
Nāllgōnē Djāis, He carries his brother on his back.

Very seldom is the order as above indicated inverted, as, e. g., *Mitskākas Kāusāk'ā'nē*, "The Tomtit is there." The "Tale of Seven-Heads" begins: *Wistātlātlām sāhānē*, "Seven-Heads is bad"; a tale of the owl, *Kāpē Isākēllāine*, "The Owl is a great thief." The term *āsmātlne*, "together," begins a tale, as, e. g., *Āsmātlne tsināgē Skinkūts āqkē Nāik'yū*, "Coyote and Fox set out together," although the formula *Skinkūts āsmātlne*, etc., is also used.

Among the Kutenai, as with some other Indian tribes of the Oregon-Columbian region, the coyote who figures so largely in myth and legend is represented as being "on his travels"; so, too, with certain of the other animal characters. *Kānāge Skinkūts* is the typical beginning of most of the stories in which he plays the chief rôle; *tsināgē*, "he starts off," "he sets out," is another initial formula of frequent occurrence in the animal-tales. The word *Kāusāk'āinē* signifies "he is at," "he stays," "he stops," "he is there," "he is." Such beginnings as *Kōnitlāinē*, "he is in his house," "he is at home," and *Kāktlūnām'nē*, "there is a village," are quite picturesque.

Often there is no terminal formula in Kutenai stories. A common term, however, is *tāgas*, "ended," "enough," "done," "finished." The phrase *lāllōnē*, "there is no more," also occurs. The terminal *Kāpēt*, used by some of the Indians, seems to be the *Kopēt* of the Chinook jargon, modified by supposed derivation from Kutenai *K'āpē*, "all."

The Allentiacan Linguistic Stock: Alexander F. Chamberlain

All the evidence in hand indicates that the language (extinct in the 18th century; represented by the *Grammar and Vocabulary* of de Valdivia, published in 1607 and 1608, reprinted in 1894 by Medina) of the Allentiacs, or Huarpes, forms an independent linguistic stock, the *Allentiacan*, as it may be called. The Allentiacs, according to Bonian, were quite a savage people and unrelated to the tribes of the Andean valleys. This Argentinian people inhabited, at the time of the Spanish conquest, the plains about the great lagoons of Huanacache, extending probably to the western slopes of the Sierra de Córdoba, and southward to the northern parts of San Luis and Mendoza. The Allentiac linguistic material has been discussed by de la Grasserie (1900) and Mitre (1894 and 1909).

The Bororoan Linguistic Stock: Alexander F. Chamberlain

There can be no doubt of the status of the language of the Bororó Indians of central Matto Grosso (Brazil) as an independent stock, as suggested by von den Steinen as early as 1886, or a little before that. Brinton, in his *American Race* (1891), failed to recognize this, or had not noticed von den Steinen's statement, and classed them incorrectly as Tupian. It was only in 1888, as a result of the second Xingú expedition, that the identity of the so-called "Coroados" branch of the stock with the genuine old Bororó was established. Conflicts with the whites have sadly reduced the numbers of the Bororó. Their characteristic area, as defined by Frič (1906) is "the entire course of the S. Lourenco river as far as its union with the Cuyabá, where they come into contact with the Guató." Farther north they occupy "both banks of the Araguaya right across the road that leads from Cuyabá to Goyaz." In the first half of the 18th century these Indians roved about the region of the Xingu-Araguay watershed in central Matto Grosso. Later on, the so-called "Borroró do Cabaçal" settled on the upper Paraguay. The vocabulary of 360 words given by von den Steinen in his *Unter den Naturvölkern Zentral-Brasiliens* (1894) is the most useful linguistic material of the Bororoan stock. Other

vocabularies are given by Caldas (1899) and Frič and Radin (1906); the last print also a vocabulary from Boggiani.

The Calchaquian Linguistic Stock: Alexander F. Chamberlain

The character of the Calchaquian language and the extent of the area over which it prevailed have been the subject of much discussion and dispute. Some have held that the Calchaqui, Catamarqueño, or Cacana tongue was nothing more nor less than a dialect or *patois* of Quechua, spoken in Tucuman, etc. Others seek to connect it with Aymará, Atacameñan, etc. The Calchaquis may have been a mixed people, as Lafone-Quevedo and Ehrenreich maintain. But there was an essential Calchaquian (or Diaguitan, as Boman prefers to call it) culture, and with it went a language which was still spoken in the 17th century, and, from all appearances, seems to have been an independent form of speech, deserving rank as a linguistic stock. Boman (1908) failed to find any trace of the existence in Paris of the grammar and vocabulary of Calchaqui said to have been written by the Jesuit missionary Alonso de Barzuna (or Barcena) in the 16th century. The Calchaquian linguistic data consist of place-names, etc., discussed, e. g., by Lafone-Quevedo, in his *Tesor de Catamarquenismos* (1898). At its greatest extent the Calchaquian (rather than Catamarcan or Diaguitan) stock may be said to have occupied a territory of varying breadth, between about 25° 30' and 32° 30' south latitude. For the archeology of this region much knowledge is due to the researches of Ambrosetti, his colleagues and students.

Recent Opinion as to the Position of the American Indians among the Races of Man: Alexander F. Chamberlain

The author discussed briefly the various theories in the light of the scientific literature of the last few years—the autochthonous, the European, and the Asiatic. The protagonist of the theory of the autochthonous origin of American man was the late Professor Ameghino, the Argentinian paleontologist, who derived him from the higher simians in southern South America. Prof. G. Sergi,

the Italian anthropologist, who looks with some favor on Ameghino's views, recognizes (he takes a rather polygenetic view of human origins) among his separate human races a *facies Americana*. The old view of Boyd Dawkins (resurrected by him, in a somewhat modified form) that the Eskimo are the representatives or the descendants of European cave-man, still finds favor in certain quarters, but the recognition of the interior origin (in the region east of Hudson bay) of the Eskimo as demonstrated by Boas, et al., places this theory rather out of court. That the American race is simply a Mongolian type, a view once much in favor, has lost its standing since the results of the Jesup North Pacific Expedition have become known. The data acquired concerning the so-called "paleo-Asiatic" peoples (Chukchee, Koriaks, Kamchadales, Yukaghir, etc.) of northeastern Asia and the peoples of northwestern North America, demonstrate that the "paleo-Asiatic" people, at least (as the Asiatic Eskimo did later), must have crossed from America to Asia long subsequent to the arrival of the ancestors of the American race from Asia (if they came by way of Bering strait, as now seems reasonable). The American Indians may thus be considered as an Asiatic people (sprung from the proto-Mongolian stock), considerably modified by their New World environment. By a reflux wave of migration they have "Americanized," as it were, a large section of northeastern Asia.

The Mourning Ceremony of the Southern Paiutes: Edward Sapir

The main ceremony of the Southern Paiutes of Utah, Arizona, and Nevada is an annual mourning ceremony or "cry." The expenses of such a ceremony, which generally lasts for five days in June or July, are borne by two men, one of them a close relative of a recently deceased member of the tribe. Sometimes neighboring bands are invited to take part in the ceremony. The place of the mourning ceremony varies from year to year and is decided upon at a preliminary council meeting. The essential elements of the ceremony are the singing of numerous mourning songs and the offering of valuables, such as baskets, articles of clothing, and horses, in memory of the dead.

The songs, which are accompanied by rattles held by each singer, are to be classified into four sharply distinguished types—roan songs, bird songs, coyote songs, and mountain-sheep songs. Each of these has its characteristic type of melody and accompanying movements on the part of the singers. There does not seem to be any idea of a grouping of the participants of the ceremony into four societies singing these different types of songs; one may join in the singing of any class of songs and leave one group of singers for another. There is, however, a song leader for each type of song. This merely means that certain people are proficient in the singing or composing of particular classes of songs. The texts of the songs are in comparatively few instances in Paiute, but belong to a language that is unintelligible to the singers. There is reason to believe that the types of songs, the actual song texts, and perhaps the whole ceremony, are borrowed from the Yuman tribes to the west. There is a possibility that the song texts consist of an elaborate system of burdens.

At various stages during the singing, which forms the major part of the ceremony, ceremonial "cries" take place which are conducted by a cry leader. On the last night of the mourning ceremony, during which it is forbidden to sleep, the articles which have been set aside as offerings to the dead are burned on a funeral pile; horses are shot, and valuable articles which have been exposed as offerings may be taken by others and replaced by objects of less value. It is evident that the Paiute mourning ceremony bears considerable resemblance to mourning ceremonies of various Californian tribes.

Cephalic Type Contours: William C. Farabee

The main object aimed at in all physical measurements is to find characters that shall be peculiar to the race or group of people under investigation. Under the old methods little attention was given to actual measurements of characters, except in so far as they aided in the determination of ratios or indices. The various indices for each individual were calculated and the average and range determined for the whole group. It was believed that these ratios were more constant than were the absolute dimensions, and

hence general conclusions were based upon the ratios obtained from short series.

Recently, improved methods have shown that these ratios have as wide range of variability as the measurements themselves, and it has been found necessary to apply rigid statistical methods to the actual dimensions. The most constant characters of a large number of individuals must be observed and selected for measurement. In the past the head measurements have been considered of most importance and most constant. For the De Milhau Harvard Expedition to South America a cephalometer was devised that allowed the taking of measurements from the center of the auricular passage to any desired position on the head or face. For comparative group studies these dimensions were most satisfactory. Yet one very important factor was lacking, viz., the angles between the lines, which prevented any possibility of graphic presentation. To overcome this defect and to minimize as far as possible the importance of definitely locating all the positions mentioned, a protractor was attached to record these angles. This made it possible to locate the points to which the measurements were made, whether or not the positions were correctly determined. All measurements and angles were taken with reference to the horizontal plane of the Frankfort Agreement. The vertical height is perpendicular to this plane, and this line is marked zero in the scale.

When all results have been worked out according to correct statistical methods it will be possible to plot the *means* of all angles and measurements, and when the ends of these lines have been connected by means of a spline a *type contour* will result. In the same way type contours of different related or unrelated groups in races may be made. These contours should be plotted on thin paper and superposed for comparative study. The advantage of the method is that it may be applied to the cranium as well as to the living head and direct comparisons made to determine relationships. Head measurements may be reduced to cranium measurements by allowing for the thickness of the cranial tissues.

Some Factors in the Differentiation of Human Types: Robert
Bennett Bean

Dr Bean has studied random samples from four groups of mankind—Europeans, Africans, East Indians, and Filipinos—and in each group three types that are similar in physical characteristics may be segregated. He has heretofore called these three types Primitive, Australoid, and Iberian, but here they will be designated A, B, and C, respectively.

Type A is small, brachycephalic, and platyrrhine.

Type C is tall, dolichocephalic, and leptorrhine.

Type B is medium in stature, mesocephalic or mesaticephalic, and platyrrhine.

From the standpoint of growth other factors may be utilized to differentiate the types. It is known that the relative total leg and arm length increase from birth to maturity, the face increases in size, and the umbilicus descends. To make these factors relative we may use the length of the leg in relation to stature, the length of the arm in relation to stature, the size of the face in relation to the size of the head, and the position of the umbilicus in relation to the position of the suprasternal notch and the symphysis pubis. Dividing the length plus breadth of the face by the length plus breadth of the head gives a cranio-facial index, which is low at birth and high at maturity. Dividing the distance of the umbilicus from the symphysis pubis by the distance of the umbilicus from the suprasternal notch gives the omphalic index, which is high at birth and low at maturity.

The three types may be assembled by the use of these factors according to the stage of development that each represents, as follows:

TYPE A	TYPE C	TYPE B
<i>Hypo-onto-morph</i>	<i>Meso-onto-morph</i>	<i>Hyper-onto-morph</i>
Small	Relative total arm length intermediate	Large
Small	Relative total leg length intermediate	Large
Small	Cranio-facial index intermediate	Large
Large	Omphalic index small	?

Type A is less developed than type B, and type C is intermediate.

Additional factors, mainly descriptive, have been utilized to differentiate the three types, the form of the external ear or pinna enabling one to classify any individual after close scrutiny. The distinctive differences of ear form refer particularly to the inversion or eversion of the outer rim of the concha, and the rolling in (forward) or rolling out (backward) of the helix. These changes are especially to be seen at the lower part of the ear in the region of the tragus and anti-tragus, and the helix and anti-helix. The ear of type A has an inverted concha—the tragus and anti-tragus appear to be pushed in—and an inrolled helix, giving it a trumpet or bell shape. The ear of type C is the reverse of this: the concha is everted—the tragus and anti-tragus appear to be pulled out—and the helix is rolled back at its lower part. The ear of type B appears to be intermediate between these extremes. The ear type is more distinctive than any other factor, and may be utilized more readily; therefore it is more serviceable.

The nose form is useful in the differentiation of type, although it is not so good as the ear form. The nose of type A is infantile. The bridge and root are wide and depressed, the nostrils flare and open forward rather than downward. The nose of type B is wide, long, and high, with depressed root, straight, high bridge, and nostrils that are wide and open only slightly forward, and downward. The nose of type C is narrow, long, and high, with high root and bridge, and nostrils that open downward.

The soundness of the teeth in types A and B is noteworthy, whereas the teeth of type C are very unsound.

Type C is more susceptible to diseases of the epithelial tissues, or those organs derived from the primary epithelium, such as the alimentary canal and the central nervous system; whereas types A and B are more susceptible to diseases of the mesothelial tissues or the organs derived from the primary mesoderm, such as the circulatory system.

Types A and B seem to be linked together in many respects, and in this they are different from type C, which seems a more clearly differentiated type than the other two. The three types differ slightly in the different groups of mankind, and resemble the type

that is distinctive for each group. For instance type A is distinctive for the Filipinos included in the present study, therefore types B and C resemble type A among the Filipinos; type B is distinctive for the Africans, therefore types A and C resemble type B among the Africans; and type C is distinctive for the Europeans and East Indians, therefore types A and B resemble type C among these peoples.

Type C apparently retains its characteristics in all the groups more specifically than do the other types. As this type is so distinct in at least the four groups thus far studied, besides forming such a considerable part of these four groups, Dr Bean concludes that this type in the four groups originated from the same stock. He therefore believes that the tall, long-headed blond Northern European, the small, long-headed brunet Southern European, the tall, long-headed, straight-haired black East Indian, and the tall, long-headed, kinky-haired African are derived from this original stock. Their ear form is identical, and other factors confirm this evidence. Existing differences may be accounted for by hereditary, climatic, and cultural conditions.

Linguistic Classification of Algonquian Tribes: Truman Michelson

Algonquian tribes linguistically fall into four major groups, to wit, Blackfoot, Cheyenne, Arapaho, and Central-Eastern. The last may be subdivided into Central and Eastern. Of the Central subdivision, Ojibwa, Ottawa, Potawatomi, and Algonkin form a special branch; and Peoria and related dialects distinctly belong with them, but the latter are further removed from the others than any one of those from one another; moreover, Peoria and its nearest relatives are in certain respects more archaic in their phonetics, and in some grammatical categories have more northern affinities. Menominee has the closest relations with Cree-Montagnais, though also intimately connected with Fox. Fox, Sauk, and Kickapoo vary from each other but slightly; the differences are mainly in intonation and idiom. The first two are more nearly related than either is to Kickapoo. The last is closer to Fox than to Sauk. The three distinctly belong with Cree-Montagnais and Menominee as opposed

to Ojibwa, etc. Shawnee is very close to Fox, Sauk, and Kickapoo, but in certain respects agrees with Ojibwa, etc., and the Eastern subdivision. Natick clearly belongs with the Central and not with the Eastern subdivision. In some categories it has affinities with the Ojibwa branch, but in others it is varied, and has some marked characteristics of its own. Delaware decidedly belongs to the Central and not to the Eastern subdivision, despite the popular notion to the contrary. The material in Zeisberger is a medley of Unami, Unalachtigo, and Munsee. It is sufficiently clear that the linguistic relations of these were different; but the existing material is so unsatisfactory that it is premature to make any definite statement. The Eastern subdivision consists (today) of Micmac, Passamaquoddy, Malecite, Penobscot, and Abenaki. Micmac is specialized in that it employs a conjunctive instead of an independent mode; but the popular notion that it differs widely from the other members of the subdivision is mistaken, as is the belief that the Eastern subdivision belongs with the Delaware. On the contrary, the relations of the group are distinctly with Fox, etc., and Shawnee.

Dr Michelson's paper is to appear in amplified form in the Twenty-eighth Annual Report of the Bureau of American Ethnology.

The Status and Development of Canadian Archeology:

Harlan I. Smith

The archeological work of the Geological Survey of Canada since June 15, 1911, the date of Mr Smith's appointment as Dominion Archeologist, has been divided into two main groups—the activities for diffusing archeological knowledge by such means as museum exhibits, guidebooks, and lectures, and those for increasing such knowledge by exploration, original research, and systematization.

The national collections have been classified tentatively into groups corresponding to the five ethnological culture areas. This grouping may be modified with the progress of research. The collection from the southern coast of British Columbia and the one from the southern interior of British Columbia are representative, and the collection from Ontario is large. The other provinces of the

Eastern Woodlands, the Plains, and the Arctic are hardly represented at all, and there are practically no data at hand concerning them. Popular guides have been prepared for the two western archeological areas, and work is progressing upon similar guides for the others. A series of lantern slides illustrating the archeology of Ontario has been made; general and topical labels for the collection are in the hands of the printer; duplicates of these will probably be furnished to the other museums throughout Canada, which with duplicate specimens, casts, and photographs, when supplied to these museums, will make the archeological work truly national.

An archeological survey of the Dominion is being organized, a reconnaissance has been made of some of the village sites in Ontario, and a survey of Brantford township has been completed by Mr W. J. Wintemberg. A scheme for systematizing and digesting the scattered and incomplete archeological data at hand and to be received in the future has been inaugurated. The coöperation of railroad officials, the North West mounted police, Indian agents, and geological explorers has been secured.

It is proposed to explore the less well known parts of Canada beginning with intensive exploration at one site in each of the great cultural areas, in order that the results in the way of collections and monographs may be used as standards to which to refer for identification the results of future exploration obtained in bordering areas where we may expect to find mixed or superimposed cultural material.

It is planned in the near future to make a reconnaissance of the Plains from which there is practically no material today available, to continue scientific exploration into the northern interior of British Columbia, using the Grand Trunk Pacific as a base, and to do an intensive piece of excavation along the St Lawrence. Next the shell-heaps of the Atlantic coast may be examined.

The Analysis of Chippewa Music: Frances Densmore

The points discussed and the results arrived at in Miss Densmore's study are here summarized: Environment of Chippewa Indians,—possible influence of natural surroundings upon musical

expression,—difference between expression by means of tone and expression by means of musical intervals,—intonation of Chippewa singers more correct on large than on small intervals,—various classes of the 340 songs under analysis, two forms of analysis, melodic and rhythmic,—difference between tonality and key,—large proportion of Chippewa songs are major in tonality, but large proportion of intervals are minor,—average interval in 340 songs determined by reducing the 8286 intervals to terms of a semitone, the result showing the average interval to contain 3.1 semitones, or one-tenth of a semitone more than a minor third,—size of interval largest in songs of the pipe dance and moccasin game, and smallest in songs connected with gifts,—interval-formation noted most frequently in songs recorded at most primitive settlement,—interval of the fourth shown to characterize 21 songs concerning motion and 15 songs concerning animals,—consideration of the five-toned scales,—permanence of the fifth,—feeling for over-tones of a fundamental indicated by structure of melody,—*interval* as melodic nucleus and *rhythmic unit* as rhythmic nucleus of Chippewa songs,—examples of development of each,—origin of songs in dreams,—analysis of dream state and influences acting upon it,—structure of songs shown to be harmonic, purely melodic, and melodic with harmonic framework,—average speed of drum in 340 songs compared with average speed of voice,—ability of the Indian to maintain two rhythms at the same time,—key of Chippewa songs compared with key of sounds produced by insects according to Dr Gardner,—why do Chippewa sing?—characteristics of songs of love and grief,—detailed analysis of moccasin game songs with relation to the nature of the game and the mental state of the players,—a majority of Chippewa songs shown to be connected with an unsatisfied state of mind.

The papers read of which the Secretary was unable to obtain abstracts were:

The Anthropology of the Pueblos: A. Hrdlička. (To appear as a bulletin of the Bureau of American Ethnology.)

Notes on the Words and Music of the "White Captive" Ballad: Charles Peabody.

A Comparative Sketch of the Menominee: Alanson Skinner.

Quechua Folk-Music: W. C. Farabee.

The Permanent Protection of the American Indian: Franklin W. Hooper.

Notes on the Chippewyan, Sarcee, and Kiowa Apache: Pliny E. Goddard.

Amalgamation in Minneapolis: A. E. Jenks.

Results of Field-work among the Hurons of Lorette (Quebec), Anderion (Ontario), and Wyandotte (Oklahoma): C. M. Barbeau. (To be printed in full in one of the annual reports of the Geological Survey of Canada.)

The following papers were read by title:

William Carter, Bensontown Homer: Phillips Barry.

An Early Cranium of Homo Sapiens from a Cavern at Unterlesene, near Trieste: Harris H. Wilder.

The Distribution of the Spear-thrower in South America: M. H. Saville.

Some Analogies between the Pottery of the Southwest and that of the Predynastic Period in Egypt: A. V. Kidder.

Early History of the Yuchi Indians: John R. Swanton.

The Relation of the Quickness of Learning to Retentiveness: D. O. Lyon.

Cayuga Notes: Grace E. Taft.

DISCUSSION AND CORRESPONDENCE

THE METHODS OF ENGLISH ETHNOLOGISTS

IN a letter with regard to Dr W. H. R. Rivers' "declaration of independence from the traditional point of view of his compatriots," viz. "the idea of evolution founded on a psychology common to mankind as a whole," Dr R. H. Lowie (*Science*, xxxiv, 1911, p. 604 f.) concludes: "The significant fact remains that one of the most distinguished of English ethnologists now finds himself in substantial agreement with the position generally held in America." Dr Lowie seems to imply that the attitude in America is in common agreement as to the multiplex cultural, with correspondingly various evolutionary, development, and that Rivers is the only English ethnologist who has come to this conclusion.

Dr Lowie refers to more than one American writer who has recognized this question of "dispersive evolution" and multiplex cultural development. He has, however, made no reference to what the present writer finds one of the most crucial discussions of the whole question of comparative ethnology, to wit, Dewey's article on "The Interpretation of Savage Mind," which appeared in *The Psychological Review* ten years ago (vol. 9, 1902, pp. 217-230).¹ Dewey says:

"Comparison as currently employed is defective—even perverse—in at least three respects:

"(1) It is used indiscriminately and arbitrarily. Facts are torn loose from their context in social and natural environment and heaped miscellaneous together, because they have impressed the observer as alike in some respect. Upon a single page of Spencer (*Sociology*, I, 37) . . . appear Kamschadeles, Kirghiz, Bedouins, East Africans, Bechuanaas, Damaraas, Hottentots, Malays, Papuans, Fijians, Andamanese—all cited in reference to establishing a certain common property of primitive minds. [Query: Is he silent about "THE GOLDEN BOUGH" because its pages offer lists too long for insertion as illustration?] What would we think of a biologist who appealed successively to some external characteristic of, say, snake, butterfly, elephant, oyster, robin in support of a statement? And yet the people mentioned present widely remote cultural resources, varied environments and distinctive institutions. What is the scientific value of a proposition thus arrived at?

¹When the above was written Professor Boas' review of Graebner's *Méthode der Ethnologie* (*Science*, Dec. 8, 1911) had not appeared.

"(2) This haphazard uncontrollable selection yields only static facts—facts which lack the dynamic quality necessary to a genetic consideration.

"(3) The results thus reached, even passing them as correct, yield only loose aggregates of unrelated traits—not a coherent scheme of mind."

I agree with Dr Lowie that "questions of priority or misunderstanding are relatively unimportant"; at the same time, just as he feels called upon to correct an apparent misapprehension on the part of Dr Rivers as to the methods of American workers, so the present writer would like to assure him that were he (Dr Lowie) "telescopically gifted, he would assuredly read nothing but amazement and surprise" in the eyes of some, at least, of the English anthropologists, "as they peruse his extraordinary [implied] characterization of their activity." For Royce and the American ethnologists are not the only ones who have recognized the principle that "not Quantity, but Order, is the fundamental category of exact thought about facts"; and it was an Englishman who wrote: "For no definite precept can be more than an illustration, though its truth were resplendent like the sun, and it was announced from heaven by the voice of God. And life is so intricate and changing, that perhaps not twenty times, or perhaps not twice in the ages, shall we find that nice consent of circumstances to which alone it can apply." "It is," says Tylor, "of as little use to be a good reasoner when there are no facts to reason upon, as it is to be a good bricklayer when there are no bricks to build with." (*Early History of Mankind*, p. 36.)

As a student for three years in one of the larger English universities, I have had impressed upon me the principle of caution and critical attitude in dealing with anthropological data, as well as the necessity of finding comparative culture that is comparable before making inductions—and this with a thoroughness and emphasis to which I have found no comparison whatsoever as a student in America. By way of introduction to a thesis presented at Oxford nearly two years ago, I said in part, as regards method:

"Our material must be gathered from the same setting, so far as the facts may be supposed to be related, the one to the other. The method by which it should be collected must be at least two-fold: first, *intensive*; second, *comparative*. By *intensive*, we mean that no result is of any value unless you have carefully and, so far as possible, exhaustively, treated the particular case with which you are engaged. It will not be sufficient to say that you have found such and such correspondences and such and such differences. This has little worth unless you go further and ascertain how far these may be held to be the total of correspondences and the total of differences; and, perhaps more important still, to what extent these similarities are more than mere chance correspondences and represent

really efficient factors. Now, it may be that these factors are not equally efficient; accordingly, it is incumbent upon us to discover the supremely efficient ones and to assign them their due place in a hierarchy of values. To be *intensive*, then, means, merely to be thorough in our study of each individual case that we take up. The importance of this thoroughness cannot be too much insisted upon, since anything short of it, if it does not actually vitiate results, at least gives them no claim to our respect. A first glance and superficial consideration of certain relations may point obviously in one direction; while a more thorough understanding of the case, involving a study of closely related conditions, may lead us to quite other conclusions. A most difficult thing to decide, for example, is whether the given correspondences are merely matter of fact ones or are intimately related.

"An intensive study is a necessary preliminary to the understanding of any particular case. But the conclusions deduced from a study of any given case may not be applicable to any other than itself, indeed may be contradicted by the conclusions of some other case. Hence, in order to adduce any principle or law or tendency, we must make a study of many cases—that is, we must study comparatively the individual cases which have been studied intensively. We must synthesise the results of these various analyses.

"In our comparative study we must bear in mind this important consideration, viz. that comparisons must be of like individuals or of like groups: there must be a common background, a common setting for the trait or tendency whose relational aspect we study, since these are colored and conditioned by all sorts of external and internal circumstances and 'cribbed, cabined and confined' by social influence and local prejudice. We must know something of these extraneous as well as of these inner influences before we can make true comparisons.

"In no aspect of the problem has the comparative method been more abused than in its anthropological aspect. Students have serenely ignored the important truth that facts about the life and beliefs of a people can receive no interpretation aside from their setting. A vast quantity of similar concretes ruthlessly abstracted from their proper setting proves nothing by this multiplicity beyond that same resemblance by virtue of which they were brought together. Anthropological treatment has almost invariably suffered from the results of such inane methods and the monotony should be broken by more rational ones. . . . And, most of all, should these facts be counterbalanced and offset by any inference drawn from whatever masses of material and give to all evidence its due weight. For that reason, in every comparative study, it seems wise and safest to study with utmost care a few tribes rather than glean at large from many fields."¹

¹ My entire anthropological training had been English, and both my examiners (the Reader in Psychology at Oxford, and the Reader in Ethnology at Cambridge) were English!

This thesis, an attempt to study the conditions of the development of personality among savages, was submitted to the anthropological department of one of the universities in this country, kept by them some eight months, and finally returned to

Dewey's words may have resounded to good effect through the corridors of Chicago and of Columbia, but a sleeping, dogmatic formalism still lurks in some nooks and crannies of other American institutions known to the writer, where methodology limps lamely in the ruts of a century ago. Indeed, in view of the fact that in more than one of the larger American universities, courses based on Spencer's *Descriptive Sociology* still flourish, and facile deductions of universal import out-Spencer Spencer himself still evolve, it is time to look to ourselves as well as to look abroad.

That some, at least, of the English anthropologists share the "American" view as to multiplex origins—a view that seems to me no more American than English—I know from my close acquaintance with their methods and the manner of presenting their subjects to classes. Indeed, were I to speak from my own experience, I should be forced to say—what, of course, is true only in my own experience—that ready inference from insufficient premises is characteristically American, while caution, broad and critical survey, and absolute lack of any tendency toward dogmatic assertions best flourish on English soil. Balfour, who has devoted some thirty years to comparative technology, was ever and anon pointing out the different lines of evolution in different areas and the caution with which we must regard any tendency as being general, or applicable to an area where it has not actually been found.

If I should forget all else about Marett, Tylor's successor as Reader in Social Anthropology, I could never forget that he was forever cautioning us against the liability of taking apparent for real similarities, and the necessity of making comparisons, if at all, from culturally similar regions. His criticisms of the Frazerian method and his departure from Frazerian interpretations and inductions seem to have received little attention in America and a word in that regard may not be out of place here. His views seem to me of such intrinsic value, aside from their bearing upon the immediate topic of discussion, and so little appreciated on this side of the water that I beg leave to make use of the following extracts which will present his point of view more correctly and convincingly than any comment of mine.

me without a word of comment. Either it was a worthless subject, a wrong method, or an impossible solution. To criticize either one's method or one's result is helpful and cause for gratitude; to ignore one's interest and effort altogether is, to say the least, tantalising. But perhaps as Mr Findlay says, "life would not be tolerably agreeable if it were not for its amusements."

With regard to his use of the term "pre-animistic," for example, Marett says (Preface to *The Threshold of Religion*):

"What I would not be prepared to lay down dogmatically or even provisionally is merely that there was a pre-animistic era in the history of religion, when animism was not, and nevertheless religion of a kind existed. For all I know, some sort of animism in Tylor's sense of the word was a primary condition of the most primitive religion of mankind. But I believe that there were other conditions no less primary; moreover, I hold that it can be shown conclusively that, in some cases, animistic interpretations have been imposed on what previously bore a non-animistic sense. But, with regard to the use to which the word 'pre-animistic' has been put by such writers as Dr Preuss, Dr Farnell, Mr Clodd, Mr Warde Fowler, Mr Hodson, and others, I take it . . . that 'non-animistic' would have served most of their purposes almost as well."

I am told that a renowned head of one of the large departments of one of our largest universities tells his classes the following: "In all primitive religions there are these four elements: Magic, Tabu, Animism, and Totemism." Such was the up-to-date nineteen-eleven pronouncement. Compare with this the following from Marett's article on "Religion (Primitive)" in volume 23 of the *Encyclopædia Britannica*, where he says (p. 63):

"This fundamental homogeneity of primitive culture, however, must not be made the excuse for a treatment at the hands of psychology or sociology that dispenses with the study of details and trusts to an *a priori* method. By all means let universal characterization be attempted—we are about to attempt one here, though well aware of the difficulty in the present state of our knowledge—but they must at least model themselves on the composite photograph rather than the impressionist sketch. An enormous mass of material, mostly quite in the raw, awaits reduction to order on the part of anthropological theorists, as yet a small and unsupported body of enthusiasts. Under these circumstances it would be premature to expect agreement as to results. In regard to method, however, there is little difference of opinion. Thus, whereas the popular writer abounds in wide generalizations on the subject of primitive humanity, the expert has hitherto for the most part deliberately restricted himself to departmental investigations. . . . The anthropological expert . . . insists on making the primitive point of view itself the be-all and end-all of his investigations. The inwardness of savage religion—the meaning it has for those who practice it—constitutes its essence and meaning likewise for him, who after all is a man and a brother, not one who stands really outside."

A decade ago (see *Classical Review*, xv, 1901) this writer was remarking upon the copious pigeon-holes into which theorists were shooting the raw facts of anthropology more or less at random—simply because

they had to fit somewhere. Little wonder that Westermarck's array of facts and authorities gave the Oxford don somewhat the sensation of an avalanche of books about to fall on one's head. "Not quantity but quality" is the one strain that runs through all his criticisms and discussions, with an undertone of "method! method! method!" For example, in a review of the second volume of Westermarck's *Origin and Development of the Moral Ideas*, we read (*Athenæum*, April 3, 1909):

"To lack of control on the part of the live memory is chiefly due that special fallacy of the compiler, *ignoratio contextus*. Facts are unwillingly divorced from their literary context, or, more fatal still, from their sociological context. Even Prof. Westermarck, we believe, who strives so hard to be critical in his use of his authorities, has occasionally included spurious, or at any rate wrongly labelled, specimens in his vast museum of anthropological materials. . . . Granted that the civilized man, considered in abstraction from his social inheritance—in a word, from his education—is the natural man or worse, does it follow that, when the results of the socializing process have been counted in, there will remain any fundamental similarity in respect to ethics as tried by the test of conduct? It was Darwin himself who said that the difference between savage and civilized man is the difference between a wild and a tame animal. Had he laid greater emphasis on the part played in the moral life by social tradition, Prof. Westermarck might, we think, have done more to bring this difference out."

In his review of Frazer's *Totemism and Exogamy* (*Athenæum*, June 11 and 18, 1910), Marett gives a similar caution:

"The time has come to work by regions. This is not to abandon the hope of discovering universal tendencies amid the bewildering variety of man's efforts after culture. It is simply to defer that hope until we are in a better position to appreciate each piece of evidence in relation to that organic context whence most of its significance is derived. . . . Some day . . . it is to be hoped, the rising generation of anthropologists, following the rule *divide et impera*, will produce a series of sociological monographs capable of serving as the basis of the sounder comparative studies of the future. . . . Totemism, by these two enthusiastic apostles of the world-wide method has been brought so near home that the fact that British dukes habitually abstain from eating strawberry leaves would, doubtless, sooner or later have been set down to a sacred tradition cherished in secret by families whose sense of ancestry is exceptionally strong.

"It is to be hoped in the interests of such relatively final justice as science must try to dispense, that, as anthropologists increase in numbers and intensive cultivation of their not unlimited field becomes a virtue born of necessity, this duty of filtering to which Dr Frazer did not feel equal (having several continents waiting for him after he finished with Australia) will be performed thoroughly and conscientiously, as befits researchers who are aware that gold may be found in grains as well as in nuggets. . . . We may be allowed to wonder—speculatively,

as it were, and without prejudice—whether the digest of information concerning this or that region touches attainable finality. Thus the totemism of a peculiarly interesting region, the North-West Coast [of America] is, as perhaps no where else, intimately bound up with the whole social system; so that it might be argued that no study short of a thoroughgoing sociological investigation of the institutions of this group of tribes could make the meaning of their totemic practices and beliefs intelligible in all their aspects."

"Now," as Marett well knows, "there are those champions of a sociological method who have accused British anthropologists in general of substituting unconsciously for that *formule d'ensemble* of the historian, which should correspond to some gradual development actually observable in the world of fact, a pseudo-historic and merely logical representation of how something corresponding to a concept, or even to a mere name, sprang spontaneously into being; which mode of origination, they allege, is regular in ætiological myth, but rare in nature." By what right the writer of the above should share that reputation I do not know, beyond the indisputable fact of his geographical position—weighed against which his comparative isolation as an original and critical thinker seems of no moment. Does the following sound Frazerian? (See *The Birth of Humility*, Oxford, 1910, p. 6.)

"No isolated fragment of custom or belief can be worth much for the purposes of Comparative Science. In order to be understood, it must first be viewed in the light of the whole culture, the whole corporate soul-life, of the particular ethnic group concerned. Hence the new way is to emphasize concrete differences, whereas the old way was to amass resemblances heedlessly abstracted from their social context. Which way is the better is a question that wellnigh answers itself."

If these extracts do not suffice to convince the reader of what he may look upon as the un-English attitude of the Oxford Reader in Social Anthropology, let him peruse still one more—or better yet, let him read the whole of the article entitled, "The Present State of Anthropology," which appeared in the *Athenæum* (Mar. 12, 1910), and from which the following is quoted. Nor am I aware of the writings of any American author in which these points have been better presented or in any respect more significantly stated. Marett says:

"On the part of the select few who have tried to master the subject thoroughly, there is an evident desire to introduce exacter methods at all costs. There is no need to seek far for the cause of this anti-popular movement. It lies in the disillusionment which is the inevitable sequence of that gay and irresponsible time during which a youthful science sows its wild oats. Once let it be realized

that it is equally necessary to take account of similarities and of differences when employing the comparative method, and a clean sweep has to be made of the greater part of the standard anthropological authorities, with their naïve scheme of a worldwide unilinear evolution. Intensive study is the demand of the new era. It is seen that, before profitable comparison can be instituted, the things compared must be severally known to the bottom. Each datum must be constructed in the light of what Dr Farnell has termed 'the adjacent anthropology,' namely, the whole context of culture to which it is organically related. Thus the rising generation of experts is content to forego entirely the delight of reconstituting, by means of the imaginative manipulation of snippets, the age of magic, the totemic stage of society, the epoch of the undivided commune, and similar wholesale phases of 'the great might-have-been.' Its interests are local and specific. A definite anthropological province such as Australia, or even a smaller area such as the North-West Coast of America, is nowadays held to provide scope enough for the energies of the most ardent 'comparativist'. In this way, it is hoped, there will in time be given to the world a number of departmental digests serving the double purpose of furnishing the theorist with well-tested material, and indicating to the field-worker what gaps in the evidence he should endeavour to fill. '... They [Spencer and Gillen] have shown to what unplumbed depths the most unpromising types of savage culture do in fact reach down. Henceforth, to arrive, in Mr Dennett's telling phrase, at 'the back of the black man's mind,' must appear as a most formidable undertaking—one that calls as it were for a fully equipped anthropological 'Challenger.' To haul in a few bucketfuls of surface water has scientific values no longer. Once established then, this demand for deep-sea dredging is bound to create a supply."

By way of conclusion, I may say that in my experience the Englishman's ignorance of American methods is no more colossal and no more a matter of deprecation than our ignorance of *his* methods and theories. Upon my first appearance here I was very voluminously assured of the narrowness and time-honored insularity of the English, particularly as scientists. Perhaps they are narrow, but it has occurred to me—and the impression persists—that if Americans are broader, they are correspondingly thinner in content and more superficial. This, however, is merely exemplifying the very fault which I hoped to point out: our too ready characterization of a nation or a class and the ready generalizations from insufficient data, usually as false as they are facile. And, lest the purport of the above be misunderstood, let me say that though Dr Lowie's letter to *Science* has called this forth, I have no reason to believe that he is one of those who have made the false and facile deductions that we must all deplore.

In closing, I may be allowed to refer to Marett's *Anthropology*, a review of which will be found in *Current Anthropological Literature* of

January-March, 1912. Finally, as to national scientific methods I may be allowed to quote the following from the pages of a letter written me by an English ethnologist (though I do it without having asked permission), which I feel must express the sentiments of all concerned. In regard to this article and the question of 'American' and 'English' methods, he wrote:

"I think there is something in what Lowie says, only, of course, he exaggerates. Don't you exaggerate either! Let us keep mere partisanship out of anthropology, and rather take the wiser point of view, from which one sees that discussion and the clash of postulates all make for truth in the long run: and remember that Science is cosmopolitan—not English or American, but both and neither. The one thing to transcend is parochialism—which is not any the better, if it is a matter of hemispheres and continents."

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NOTES ON CERTAIN USAGES RELATING TO LINGUISTIC WORK

INTELLIGENT variations and innovations in use of terminology, alphabetic symbols, and punctuation should be permitted and encouraged by editors and publishers and all who have charge of the form in which linguistic material is presented. It is only by variation in usage that progress in these branches has been made in the past. Rigid uniformity in these matters has, in our present state of knowledge, nothing to commend it; it means death to progress. One quickly and easily becomes familiar with any terms or symbols used by any writer, provided that their value is explained, that they are employed because of scholarly reasoning, and that they are sanely conservative. It matters not at all if one finds *š*, *ʃ*, *c*, or *u* employed in various records of various languages for the sound of English *sh*. The fittest of these characters will eventually survive. Any one of them should be allowed to stand unchanged, but not unchallenged, in published linguistic work. One should be allowed to have the abbreviation for doctor printed either *Dr.* or *Dr.*, according to preference. At the same time much attention and discussion should be given to such usages.

The relative merits of the practices discussed in the following brief notes ought to be thought out and tried out. We should then hold to those which are best.

1. It appears that most languages distinguish between what we may term roots and formal elements. If we call roots when compounded

with other roots, according to their position, adpounds, prepounds, impounds, and postpounds, just as we now speak of formal elements, according to their position, as affixes, prefixes, infixes, and postfixes, could not many awkward expressions, like "used as the first element of a compound," be avoided? The verbs would be adpound, prepound, inpound, postpound, corresponding to affix, prefix, infix, postfix. In order to make our terminology more regular, would it not be well generally to adopt "postfix" instead of "suffix"?

2. In ordinary work would it not be better to classify sounds in the production of which the tongue plays an important part according to the portion of the tongue that articulates rather than according to the region of the roof of the mouth at which the tongue articulates? Such sounds as t, d, s, n, Spanish ñ, etc., are made with the tip or blade or front part of the tongue, and might therefore be called frontal consonants. Sounds such as k, g, Roumanian Ț, etc., are made with the dorsal or back part of the tongue and might therefore be called dorsal consonants. We might then speak of labial, frontal, dorsal, and laryngeal sounds. "Frontal" and "dorsal" are more wieldy terms than "front-of-the-tongue" and "back-of-the-tongue." The term tergal is perhaps preferable to dorsal.

3. "Glottalized" seems to be a good term to apply to sounds produced with simultaneous closure of the glottis. If in the accompanying diagram we let the upper lines stand for closure above the larynx and the

Closures above larynx. — — — — —
Closures in larynx. — — — — —

lower lines signify the closure in the larynx, while the length of the lines indicates the duration of the closures, a number of different varieties of glottalized stops for which we have as yet no current terminology may be illustrated. A consonant merely followed by a glottal stop should not be called a glottalized consonant.

4. Consonants such as occur in Spanish *abogado* might be called *lëvis*. This Latin word could be used both as noun and adjective in English.

5. Instead of using "voiced" and "voiceless" to denote the presence or absence of vibration of the vocal chords in the production of sounds, might it not be better to use the terms *sonant* (Latin *sonāre*, to make a musical or other sound; Sanskrit *śanati*, Anglo-Saxon *swinnian*, of the same meaning) and *surd* (Latin *surdus*, deaf; dark, said of color; vague, unknown)? *Sonant* and *surd* are perhaps the best Latin words which could be found for these meanings, are at present used as widely as

"voiced" and "voiceless," and have the advantages of forming the nouns *sonancy* and *surdness* or *surdity* and of being readily taken into any language. Such words as *voicedness* and *voicelessness* are awkward.

6. *Orināsal* (Latin *os*, mouth; *nāsus*, nose) is well applied to vowels produced with both mouth and nose passages open. The term *naso-oral* is less euphonious. In a phonetic key *orināsal* vowels should for obvious reasons be listed before oral vowels.

7. In Latin *palātus* or *palātum* refers loosely to the whole roof of the mouth, but especially to what we now call the velum or uvula. English "palate" is still used in ordinary language with much the same meaning as Latin *palātus* or *palātum*. But in scientific language there is a tendency to apply *palate* to the hard palate only, while *velum* (modern Latin *velum palātī*, sail of the roof of the mouth) is used to signify the soft palate in the rear of the hard palate. We need three terms, each of which is a single word only—one for the entire roof of the mouth, one for the hard palate, and one for the soft palate. As it is, we have only the two terms, *palate* and *velum*, however we apply these terms. We suggest that *palate* be used, as was the Latin word from which it is derived, to designate the entire roof of the mouth; for the soft palate the term *velum*, Latin *velum palātī*, might well be retained. For the hard palate a new term should be found. Latin *corōna palātī* (Latin *corōna*, from Greek *κορώνη*, ring, wreath, rim, anything bent), English *corōna*, might be applied to the hard palate for want of a better term. Latin *gingīva*, gums, would hardly do as a designation for the hard palate since it would probably not readily become anglicized, though we might attempt to adopt its French form *gencive*. The adjectival forms would then be *pālatal*, *cōronal*, and *vēlar*, from which verbs *pālatalize*, *cōronalize*, and *vēlarize* might be formed. A term better than *corōna* could probably be found without difficulty.

8. This would leave us free to use the term *palatalize* in a more proper sense than it is now employed, namely, as indicating a certain kind of articulation and release.¹ It is possible to articulate a palatal consonant back of the "palate" if we use that term as it is now being used, while most of the sounds articulated against the "palate" are not palatals. According to the terminology here suggested, *Palute* contains both palatalized frontal consonants such as *nʳ* and palatalized dorsal consonants such as *ŋʳ*. Jespersen's distinction between palatal and palatalized sounds will not be discussed here.

9. The term *marginal* (Latin *margo*, border, rim, edge) might be

¹ Cf. R. Lenz, *Zur Physiologie und Geschichte der Palatalen*, Diss., Bonn, 1887.

used for sounds articulated against the rear margin of the velum or soft palate. At present some writers apply velar to these articulations, while others apply uvular, reserving velar for such articulations as those of ordinary *k* and *g*, that is, for articulations made against the velum. If the soft palate is called the velum, then all articulations against it are velar. Articulations against the posterior rim of the soft palate would better be called marginal than uvular, since they have more to do with the *margo* or rim than with the uvula. The term marginal has been applied by some to l-sounds instead of the commoner term lateral, but for l-sounds lateral (Latin *latus*, side) seems preferable to marginal. It need not worry us that it is possible to articulate l-sounds with neither front nor sides of the tongue touching the roof of the mouth.

10. Instead of stops, explosives or plosives, is not clusives (from Latin *clausus* or *clūsus*, closed) a better term? Some of the explosives do not explode. The term clusils has been proposed by Kewitsch and others. It is readily taken into any language, or may be translated in English by stop, in German by Sperrer or Verschlusslaut, in French by *arrête*. I prefer clusives to "clusils." Closure is a shorter term than occlusion.

11. For such sounds as English *v*, *z*, German *ch*, the term fricative (Latin *frictus*, rubbed) seems best. Constrictive has little to recommend it. Spirant (Latin *spirāre*, to breathe) is very misleading for the following reason: A consonantal diphthong composed of a stop plus a fricative is called an affricative and not an aspirate. If spirant is used instead of fricative, one expects aspirate instead of affricative, but aspirate is applied almost universally to stops followed by a *flatus* or period of surd breath and not to affricatives. The *Handbook of American Indian Languages* uses spirant instead of fricative with the exception of Mr Thalbitzer's article, although the terms affricative and aspirate are used throughout as above defined. In Dr Dixon's article therein contained "spirant" is applied to fricatives such as *s*, and in-spirant to a variety of stops written *B*, *D*. Most of the recent books on phonetics have pointed out the advisability of using "fricative" instead of "spirant". The chief reason is, as said before, that aspirate and affricative have a settled, definite usage.

12. It has been practically settled by phoneticians that the best order in which the sounds of the language can be presented is: first the vowels, then the semi-vowels, then the consonants, beginning with the most posterior consonants and ending with lip consonants. Yet in phonetic keys of American languages almost every author presents the sounds in a different order.

13. Certain French phoneticians have proposed that *phonème* (from Greek *φώνημα*) be used instead of the ambiguous or cumbersome "sound," "individual sound," "phonetic element," etc., of various writers. In English could not *phónem* (*phónem* < *φώνημα* :: *système* < *συστήμα*) be adopted, or if this proves impracticable, *phone* (Greek *φωνή*) or *sona* (Latin *sonus*) be used for rendering "phonetic element"?

14. A syllable that has louder stress than other syllables is commonly indicated by placing the acute accent either before that syllable, or after, or over the vowel of that syllable. This multiplicity of practices is somewhat confusing. For instance, *ka'do* may mean either that the first or last syllable is the louder. It is especially confusing when the acute accent is placed after a diphthong and it is not indicated whether the diphthong be what Sweet terms ascending or descending or whether each of the elements is as prominent as the other or others. Thus *ka'ido* might have five different interpretations. Although a number of the foremost phoneticians practise placing the acute accent before the loud syllable, this sprawls the word, forces one to divide it into syllables, and for some reason is hard to get used to. It seems most natural and it is certainly most legible if the acute accent is placed over the vowel of the loud syllable, even though the latter practice requires that the printer deal with a greater number of characters than otherwise. That the acute accent placed over vowels indicates length or a variety of *umlaut* in some languages need not bother us. Perhaps the best usage to which the easily written grave accent can be put, is that it be placed over the non-dominant vowel or vowels of diphthongs. Thus phonetically we might write German *Hain* = *hain*; Spanish *bueno* = *büeno*; Russian dialectic *комната* = *kômnata*; Spanish *buoy* = *büo*; the word meaning arrow in the Taos Indian language would be *lûd*. At present there is no good method in use for symbolizing diphthongs as distinct from juxtaposed vowels. The grave accent might also be placed over the non-dominant consonant of a consonantal diphthong. Thus Russian *отцаъ* = *at'setâ*; Russian *отбаъ* = *at'etâ*.

15. Should the English meanings of foreign words be enclosed in single or double quotation marks or in single or double marks shaped like inequality signs, which are used for enclosing quotations to a large extent in French and Russian? Meanings are not quoted in the same sense that one quotes the speech or written words of an individual. Might it not be well to enclose meanings by special signs differing from the current single and double quotation marks?

16. Should comma, semicolon, colon, and the like precede or follow

the single or double right-hand quotation mark? The best modern books on grammar and linguistics that have been published in German or Russian in recent years have, for instance, *ku*, 'not'. In this country we are usually forced to use *kü*, 'not.' The latter punctuation is illogical and should go out of use, at least in linguistic work.

17. In writing and printing long *umlauted* "a" the macron is commonly placed under and not above the dieresis. This is illogical. We are representing a long *umlauted* "a", that is a long open e-sound, not an *umlauted* long "a".

18. Recently the abbreviations Mr., Mrs., Dr., and St. have been written and printed by some, especially by leading English publishers, with the period omitted. These are true abbreviations, and it is the simple old rule that abbreviations are distinguished from non-abbreviations by having a period placed after them. What is the advantage of complicating matters and making a few exceptions to the rule? Mr, Mrs, Dr, and St written without the period are very offensive to many people. Still worse than omitting the period seems the recent practice of writing these words out in full. See *Handbook of American Indian Languages*, p. 739. That M^r, M^{rs}, D^r, and S^t, with or without a period under the ^r, ^s, or ^t, are also written by some, has to my mind nothing to do with the question under discussion.

J. P. HARRINGTON

SCHOOL OF AMERICAN ARCHAEOLOGY
SANTA FE, NEW MEXICO

ANTHROPOLOGIC MISCELLANEA

International School of American Archæology and Ethnology in Mexico.—For the year 1911-12 Professor Franz Boas, of Columbia University in the City of New York, is in charge of the School. Fellows have been appointed as follows: Dr Alden J. Mason by the University of Pennsylvania, Mr William H. Mechling by the Hispanic Society of America, Mr Manuel Gamio and Miss Isabel Ramírez Castañeda by the Mexican Government. Dr Werner von Hirschelmann, fellow of the Prussian Government, left Mexico late in November to take charge of a position to which he was appointed in the Royal Ethnographical Museum at Berlin. The work of the School during the present year is directed particularly toward two problems: the affinities and subdivisions of the Mexican language, and the investigations of the development of cultural types in the valley of Mexico. In preparation of part of the former work Mr Mechling has prepared a detailed map of the distribution of languages in the State of Oaxaca, based on the manuscript vocabularies collected in 1888 by Dr Antonio Peñafiel, which the latter generously placed at the disposal of the School. Based on this work it was possible to locate two apparently strongly divergent dialects of Mexican in the State of Oaxaca, one in Tuxtepec on the Río Papaloapam and one in Pochutla near Puerto Angel. Further inquiry furnished corroborative evidence, and Mr Mechling was intrusted with the investigation of the dialect of Tuxtepec and its relations to neighboring Mexican dialects. In a population of about 7,000, nearly one hundred individuals are found who still use this dialect, more or less, and it is hoped that enough may be gathered, notwithstanding a strong infusion of Spanish words, to determine its characteristics.

Dr Mason has been intrusted with an investigation of the dialect of the Tepecano of northern Jalisco, which proves to be closely akin to Pima. The journey to the Tepecano was undertaken from Guadalajara. Professor Boas, who took part in the trip, separated from Dr Mason at San Juan de Teul, where he stayed to find, if possible, traces of the old language of the Teules. Five individuals were found who remembered a small number of words and phrases, almost all of which proved to be Mexican. However, in the vocabulary a few words were found related to Tepecano, so that perhaps the old statement of the Franciscan friars

who claimed that the Teules spoke Tepecano, which was, however, in process of being superseded by the Mexican, may be considered as corroborated.

Linguistic work is also carried on by Miss Ramirez, who is collecting modern texts and rituals from some of the villages of the valley of Mexico.

Search among the ruins of the Cerro de Teul revealed many broken pieces of pottery of a type akin to Tarascan earthenware, but also some special forms, the most remarkable of which is a rectangular, slate-like object, covered on one side, except a narrow frame, with hachure designs, evidently made with a comb-like instrument. In the overhanging cliffs of the mesa, burials were found, with skeletons with deformed skulls. Entire skeletons were in a recumbent position with knees drawn up to the chin and arms folded over the chest. Mixed in were found many loose bones which suggest the use of the same place for repeated burials. No traces of outer walls were found; nevertheless the evidence of charcoal at various depths and numerous other remains suggest the use of these recesses as dwellings, which were probably protected by a lean-to of straw or matting, such as may still be seen in use in the caves and cliff recesses of this region. Quite a number of such recesses are inhabited in the same manner in the region of Mezquital del Oro, Zacatecas.

In the latter place a burial site was discovered on a low mesa which yielded pottery of Tarascan type. It may therefore be said that this type prevailed over the whole district, as far north as Zacatecas.

In the valley of Mezquital del Oro remains are very sparse, but on a few of the high mesas, which are difficult of access, ruins of villages were found. Professor Boas examined particularly the Mesa de los Antiguos, on which many structures were found, apparently similar in type to those of Teul and of the Bolaños region as described by Dr Hrdlička.

The gold mine of Mezquital del Oro yields many stone hammers that were used with two hands and indicate an early exploitation of the mine, although presumably belonging to the Spanish period.

In the valley of Mexico, Mr Gamio undertook a careful investigation of a small area near Azcapotzalco, a district to which Mr W. Niven first drew attention. From here were obtained many pieces of pottery and human remains, partly of the type of the valley of Mexico, partly of the special type of San Juan Teotihuacan, partly of other types not yet identified. The excavations, so far as they have been carried on, show that the valley type occurs only in superficial mounds. Under these lies a layer of decomposed tufa which contains some pottery of the

Teotihuacan type. Under these follow river gravels and sands, and then a very thick subaerial deposit in which, just under the river gravels, adobe and stone walls may be observed. Among these occur a great number of heads of the Teotihuacan type, and pottery of similar type. The stratum is about twenty-five feet thick, and it remains to be seen whether other types will be found farther down. The Teotihuacan types seem to occur in very excellent technique and very roughly made in the same layers.

Some Notable Works on South American Archeology.—Archeology is fortunate in its attraction for men, who, from choice or force of circumstances, have worked out important problems alone or through private initiative. To such sources we owe some of the most notable recent publications on the archeology of South America.

In *The Incas of Peru*¹ (E. P. Dutton and Co., New York) Sir Clements R. Markham gives some of the choicest fruits of more than fifty years' study and travel in which he has endeavored to master all the original authorities on Inca history and civilization. The result is a series of essays of absorbing interest to the general reader and at the same time indispensable to the serious historical student. Among sources recently brought to light he mentions *Nueva Coronica y Buen Gobierno*, by Don Felipe Huaman Poma de Ayala. This quarto of 1179 pages was found in the Royal Library at Copenhagen by Dr Pietschmann, who will soon publish what Sir Clements calls "the most remarkable as well as the most interesting production of native genius that has come down to our time."

A short chapter is devoted to the megalithic age; the famous monolithic sculptured doorway at Tiahuanacu, the cyclopean building in the Calle del Triunfo in Cuzco, and the stone of Chavin de Huantar, attract the author's attention but do not detain him long. He believes in the great antiquity of the megalithic civilization which probably held sway over the Andean regions from an unknown distance south of Tucuman to Chachapoyas, with Tiahuanacu as the center. The author is not accurate in his description of the sculptured figures on the Puerta del Sol, Tiahuanacu, a portion of which is reproduced in figure 19. He discusses in turn the rise of the Incas, their empire, religion, calendar, festivals, language and literature, condition of the people, the coast valleys, the Chimú, the Chincha confederacy, and finally the cataclysm. The list of kings given in the Appendix is from Montesinos, who it seems obtained

¹ For a fuller review, by Dr W. C. Farabee, see *American Anthropologist*, n. s., vol. 13, no. 3, July-Sept., 1911.

his information from Blas Valera without giving the latter credit. The Appendix also includes extensive notes on the names Quichua and Aymara, architecture and arts of the Incas, the Inca drama of Ollantay, and Inca folklore.

While much attention has been paid to Peru on the south and Mexico and Central America on the north, the field between has until recently

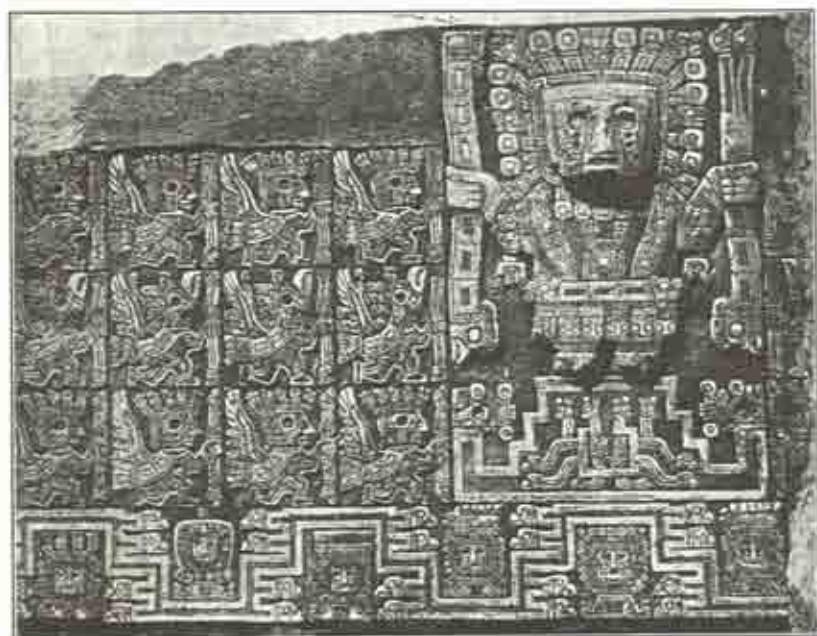


FIG. 19.—Portion of the sculptured figures on the Puerto del Sol, Tiahuanaco, Peru, worked up by Miss Adela C. Breton from a photograph in the Bolivian Government's Album.

received scant notice. Thanks to Mr George G. Heye, who financed the expeditions, and to Prof. Marshall H. Saville, who directed them, the archeological world now has two splendid volumes by Professor Saville: *Contributions to South American Archeology, Antiquities of Manabí, Ecuador* (Irving Press, N. Y.), the second volume appearing in 1910. Professor Saville distinguishes nine centers of ancient culture, five in Ecuador and four in Colombia, these of course in addition to the intrusive Inca culture. The two volumes,¹ as the title indicates, are confined to

¹ The first volume was reviewed for this journal (x, 122, 1908) by Prof. W. H. Holmes, who also reproduced some of the more important illustrations.

one Ecuadorean province. In Manabi, an arid region extending from the equator to Guayaquil, the author finds a civilization but little affected by Incasic influence. Stone seats form a special feature of Manabian archeology. They are found in great numbers, but only on Cerro de Hojas and several neighboring hills within an area not more than twenty miles in diameter. So far as Cerro de Hojas is concerned the seats were found only in the rooms of the ruined houses or *corrales*. The author enumerates about a dozen types of stone seats; he believes them to have been ceremonial. Of perhaps even greater significance are the stone bas-reliefs found principally on Cerro Jaboncillo and likewise in the *corrales*. The author divides these sculptured slabs into nine groups. The first five groups represent human female figures; in the sixth and seventh the sex is doubtful; the eighth is a complex problematic stylistic life form; and the ninth is purely diagrammatic. Under ceramics considerable space is given to figurines, human heads, whistles, and spindle whorls. The latter are decorated with incised patterns but do not compare in workmanship with the finer whorls from Colombia and the valley of Mexico. Although hunting for golden treasure was not the object of the expedition, the author admits being disappointed in the number and value of metal objects found. Each volume has an Appendix with long extracts from early Spanish authors, which with the comprehensive bibliography in the first volume brings the reader into close touch with the anthropology of Ecuador.

GEORGE GRANT MACCUDY.

Dr Paul Topinard, the noted French anthropologist, died at Paris on December 20, 1911. Topinard was born at l'Isle-Adam (Seine-et-Oise), November 4, 1830, and began his studies at the Collège Ste-Barbe in Paris, but soon was compelled to interrupt them to accompany his father to the state of New York, where the latter had extensive estates, near which, at Delhi, young Topinard was sent to school. Later he went to Philadelphia, where his time was divided between the public schools and the Augustins, and returning to New York he entered a commercial school, remaining two years. But business pursuits were not to Topinard's liking. He returned to Paris in 1848; in 1853 he was an interne of the hospitals of Paris, and became a doctor of medicine in 1860. Through the influence of Paul Broca, Topinard relinquished his practice and on the creation of the anthropological laboratory at the École des Hautes-Études, was appointed adjunct director. When the *Revue d'Anthropologie* was founded by Broca in 1872, Topinard became his collaborator, and on

the opening of the École d'Anthropologie in 1876, under Broca's direction, Topinard was appointed professor, with Bertillon, Hovelacque, Mortillet, and others, thus becoming one of the advance guard who created and continued that scientific and philosophic movement which arose with the founding of the Société d'Anthropologie. In the same year, Topinard's book, *L'Anthropologie*, appeared, and met with such remarkable success that it passed through many editions and was translated into several languages. On Broca's death in 1880, Topinard was unanimously elected general secretary of the Société d'Anthropologie. His writings on the



PAUL TOPINARD—1830-1911

subject of anthropology alone are too numerous to mention here, but attention should be directed to his masterpiece, *Traité d'Anthropologie*, published in 1885, his *Éléments d'Anthropologie générale*, and *L'Homme dans la Nature*. Topinard was a zealous student of all branches of anthropology, and endeared himself to his fellows by his amiability and his generosity in parting with his store of knowledge gathered during many active years.

Augustus Henry Keane.—The following notice of the life and work of Dr A. H. Keane of London, by Sir Edward Brabrook, is extracted

from *Man* for April, 1912. Dr Keane was born in Cork, June 1, 1833, and died February 3, 1912.

"The science of ethnology has lost a devoted student by the death of Dr Keane. For it he made great sacrifices in early life, to it he devoted high intellectual qualities, a rare linguistic faculty, and untiring industry. He began to take part in the meetings of the Anthropological Institute in 1879, in which year he contributed a monograph on the relations of the Indo-Chinese and inter-Oceanic races and languages, and discussed a paper on a similar subject by Colonel Yule. He was an eloquent speaker, and joined in our discussions with much effect. At the anniversary meeting in January 1880 he was elected a member of the council. In 1883 he prepared at the invitation of that body and read to a special meeting of the Institute a paper on the Botocudos, two males and three females of that people being present. In the same year he was appointed Professor of Hindustani at University College. In 1884 he read to the Institute a paper on the ethnology of the Egyptian Sudan, and in 1885 one on the Lapps, a group of whom were exhibited on the occasion. At the anniversary in January 1886 he was elected a vice-president of the Institute, a distinction which he highly valued, though the vice-presidents were not frequently called upon for their services while Sir Francis Galton was president. Professor Keane's term of office expired at the anniversary of January 1890. After that time he frequently contributed to the journal of the Institute and to *Man* critical reviews of new anthropological works. In 1896 the second edition of his standard treatise on ethnology was issued from the Cambridge University Press. In it he discussed separately the fundamental ethnical problems and the primary ethnical groups. Under the first head were included the physical and mental evolution of man, the antiquity of man, and the specific unity and varietal diversity of man. Under the second head he laid down a division of man into four primary groups, which he designated *Homo Æthiopicus*, *Mongolicus*, *Americanus*, and *Caucasicus*. This was followed in 1899 by *Man, Past and Present*, in which the origin and interrelation of those groups are discussed in further detail. In 1900 he published a timely and enlightening work on *The Boer States: Land and People*. His contributions to encyclopedias and guides and other geographical works are too numerous to mention. His eminent services to science and literature procured for him the corresponding membership of the Anthropological Societies of Italy and of Washington, the degree of LL.D., and the grant [in 1897] of a pension on the civil list."

The So-called "Moors" of Delaware.—The *Museum Journal* of the University of Pennsylvania notes that Dr Speck and Mr Wallis of the University have been conducting investigations among the so-called "Moors" of Indian river, Sussex county, Delaware, during which they have collected a body of information capable of being developed into an instructive record of a community made up of the amalgamation of three distinct races—white Europeans, African Negroes, and Nanticoke Indians. The proportion in which these three enter into the mixture cannot be determined with accuracy.

The descendants form today an exclusive community of about 700 souls on Indian river with a smaller community of about 300 at Cheswold, Kent county, Delaware. Each community maintains a strong consciousness that preserves its identity and keeps the families of which it is composed from intermarrying with either the whites or the negroes. Physically, the members of these communities are very well formed, their mental qualities are good, and they are well-to-do.

To what extent the exclusiveness of these communities is due to Indian ancestry it is impossible to say, but Dr Speck thinks that this feeling may be due to a dominating Indian tradition. They possess an abundance of folklore and superstitions, but whether these will be found to present characteristics which will associate them with either the Indian or the Negro it is not now possible to say. Magic and witchcraft are extensively practised and a belief in the specific medical virtues of various plants forms a body of local information that makes a suitable subject for further study.

Such a community as that on Indian river obviously offers interesting material for the study of one of the far-reaching aspects of modern anthropological research, namely the effects produced by race amalgamation. Here we have an example of a community which derives its origin from three races, and which is completely self-sustained, which rests its claim to exclusiveness on a feeling of social superiority, and which presents all the essential marks of a separate ethnic and social group.

The study of this community has its bearing on such fundamental human phenomena as physical variation, tribal prerogative, clan consciousness, race sensibility, and the sociological significance of exclusive property in folklore and belief.

Dr Speck finds that the esoteric tendency which has set up barriers to protect the group against the action of outside influence is not inconsistent with a breadth of view which provides schools of a high standard and a liberal provision for the education of the youth. The moral tone

of the community is approved by all observers and the general discipline is clearly of a high order.

Marking the Oregon Trail.—The legislature of Nebraska has made appropriation for the marking of that part of the old Oregon Trail within the limits of the state, and the work will be commenced early in this year under the auspices of the Oregon Trail Memorial Commission, representing jointly the state authority, the Nebraska Daughters of the American Revolution, and the Nebraska State Historical Society. The active officers are Mr Robert Harvey, state surveyor; Mrs Lottie Gove Norton, state regent Daughters of the American Revolution; and Mr Clarence S. Paine, secretary of the State Historical Society. The local railroads have volunteered to assist in the work.

The Oregon Trail, beginning first at Independence, and later from Westport (Kansas City), Mo., went up the North Platte, across the Rocky mountains, and down Snake river, and constituted the principal highway to the Columbia region, as the Santa Fé Trail was the road to New Mexico, from about 1830 down to the era of the Union Pacific railroad. It gave title to one of Parkman's most famous works.

It is to be regretted that the Commission has selected the name and effigy of Marcus Whitman for representation on its official badge, thus tending to bolster up an exploded myth. Whitman's part in the Oregon controversy is ignored by Bancroft, and denied by Chittenden and other critical historians, while the fictitious character of the story was thoroughly demonstrated by Professor Bourne of Yale University more than ten years ago. It is not even proven that Whitman was ever in the City of Washington, and the famous ride around which the story centers was made over the Santa Fé Trail. Wyeth, Sublette, Jason Lee, Frémont, DeSmet, Carson, Parkman, Bridger, any one of these would have been a more appropriate selection, about whose connection with the Oregon Trail there is no question.

JAMES MOONEY.

All-Slav Congress.—The first All-Slav Congress and Exposition of Social Medicine and Hygiene will be held in St Petersburg during the week commencing May 28, 1912.¹ There will be five sections, the first of which, under the presidency of V. O. Gubert, will deal with medicine and hygiene of the masses; the second (J. F. Zemackij, president) with

¹As this journal goes to press, it is learned that the Congress, which promises to be of unusual importance, is postponed until 1913 in order to enable a more thorough participation of some of the Slavs outside of Russia.

gymnastics and exercises tending toward the better development of the body; the third (president, M. M. Kovalevskij), with social ethics; the fourth (president, A. V. Vasiljev), with the development and health of children; and the fifth (president, D. O. Ott), with women.

In detail, Section 1 will deal with the regulation of medical aid; hygiene of houses and cities; housing problems; nourishment, with prices of food; social and hygienic protection of workingmen; control of prevalent diseases; protection of the mental health of the population, medical education and activities; and cure establishments, springs, etc., with balneotherapy.

Section 2 comprises physical exercises; the Sokols (the great Slav gymnastic organization); athletic contests and sports; "touristics"; and bathing, with swimming.

Section 3 deals with alcoholic abuses; dissipation and specific diseases; suicide; and crime.

Section 4 extends to development of the child; health in infancy; infant mortality; training of the child before school age; school hygiene; and mental development of the child.

Section 5 includes everything relating to the functions and health of women.

The Linden Museum at Stuttgart.—Thanks to the untiring efforts of the late Count Karl von Linden, the city of Stuttgart, Germany, has a geographical and ethnological museum which is remarkable for the extent and character of its collections. Originally intended as a museum of a rather commercial character, to acquaint Germans with the customs and products of foreign countries, the institution has broadened considerably and become more scientific in character. Von Linden recognized that the time was not far distant when most of the savage peoples of the world would cease to follow the ways of their ancestors, and that, under the influence of civilization many an old art and handicraft would be forever lost. Thanks to his personal efforts, he rapidly collected a large number of costumes, carvings, weapons, of savage workmanship, and a vast amount of other exceedingly valuable ethnographic material. So rapidly did this collection grow that in 1910 it was necessary to erect a special building in Stuttgart, which in dimensions and beauty of architecture compares favorably with the largest museums of the kind in the world. The new museum was officially opened on May 28, 1911. Unfortunately, von Linden did not live to witness that event. He died January 15, 1910. In the von Linden collections will be found specimens

from every country in the world. For the purpose of completing the imperfect collections, the museum is prepared to exchange its duplicates for objects which it does not already possess. Thus, while the American Indian of the Far West is well represented, the museum feels the need of specimens from northwestern Canada, Mexico, Central America, and South America. Collectors and museum directors who desire to enter into exchange relations with the Linden Museum may address the director of the Museum für Länder- u. Völkerkunde (Linden Museum), Stuttgart, Germany.

Brotherhood of North American Indians.—A bill to incorporate the Brotherhood of North American Indians was introduced in the United States Senate on February 8. The purposes and objects of the corporation shall be "to teach, obtain, and maintain rights, liberties, and justice for all Indians equal to that of any people and inferior to none; to preserve and perpetuate the ancient traditions, arts, and customs of North American Indians; to unify their efforts and interests; to counsel together; to promote and encourage industry and thrift among Indian people; to collect, secure the preservation of, and to publish the records, papers, documents, and traditions of historical value and importance to North American Indians; to mark, by appropriate monuments, places historic and sacred to the American Indian; to impress upon present and future generations of American Indians the importance of united action for the common good; to promote a feeling of friendship, brotherhood, and good citizenship among its members; and to provide for the aged and infirm of the Indian race." The bill provides that the principal office of the Brotherhood shall be in the District of Columbia; that its membership shall consist of two classes, namely, "persons of Indian blood, and honorary members whose qualifications, rights, and obligations shall be prescribed by the constitution and by-laws." The officers are to consist of a "great sachem, as many great chiefs as there are local brotherhoods, great secretary, great assistant secretary, great treasurer, great assistant treasurer, chief registrar, chief assistant registrar, chief chancellor, chief historian, chief chaplain, board of managers, and executive committee." The incorporators belong to the Cayuse, Cherokee, Chipewewa, Chickasaw, Choctaw, Cree, Delaware, Flathead, Kootenai, Nez Percé, Palos, Onida, Oto, Pend d'Oreille, Quapaw, Quinault, Sioux, Umatilla, Wallawalla, and Yakima tribes.

Museums of the Brooklyn Institute.—In the report of the Museums of the Brooklyn Institute of Arts and Sciences for the year 1910, recently

published, Mr Stewart Culin, Curator, reports as follows on the operations of the department of ethnology:

"The work of the Department has been practically confined to the reconstruction, decoration, and installation of the Japanese Hall. This has been done with the idea of supplying an appropriate and agreeable background for the collections, and suggesting, at least, the atmosphere of Japan. The Curator has had the valued assistance of a Japanese artist, Mr Genjiro Kataoka, who has criticized the details of the arrangement and color scheme, for which he is chiefly responsible. The two halves of the hall are devoted respectively to civil and military costume. The collections comprise the objects purchased by the Curator in Japan in 1909 with funds contributed by Mr Thomas T. Barr, Mr E. LeGrand Beers, Mr Carll H. DeSilver, Mr Herman Stutzer, and Col. Robert B. Woodward, and an appropriation from the Museum Collection Fund of that year. In addition, there are displayed earlier gifts made by Mr George C. Brackett, Mr DeSilver, and Col. Woodward. Series of objects of several different kinds have been presented by individuals: the arms and armor by Col. Woodward, the costumes by Mr Brackett, the musical instruments by Mr DeSilver, games, religious and ceremonial objects, and illustrations of the graphic arts by Mr Herman Stutzer, and a very interesting collection of objects of metal, stone, and glass from the ancient dolmens by Mr Thomas T. Barr. These gifts have been supplemented with several important loans: a Buddhist household shrine from Mrs T. H. Newberry, and collections of dolls for the girls' festival from Mrs E. LeGrand Beers and Mr Benjamin Smith Lyman."

International Congresses.—The following appointments of delegates to the various international congresses which are to meet in Europe during the present summer have been announced:

Eighteenth International Congress of Americanists, London (May 27-June 1): *By the United States Government and the Smithsonian Institution:* Rev. Charles W. Currier, Miss Alice C. Fletcher, Dr G. B. Gordon, Dr Edgar L. Hewett, Dr A. Hrdlička, Prof. G. G. MacCurdy, Dr Charles Peabody, and Prof. M. H. Saville. *By the American Anthropological Association:* Dr G. G. MacCurdy. *By the Anthropological Society of Washington:* Miss Alice C. Fletcher and Dr A. Hrdlička. *By the American Philosophical Society:* Dr Franz Boas. *By Yale University:* Prof. George G. MacCurdy.

Third International Archeological Congress, Rome (Oct. 9-16): *By the Smithsonian Institution:* A. L. Frothingham.

Fourteenth International Congress of Prehistoric Anthropology and

Archeology, Geneva (first week in September); *By the United States Government and the Smithsonian Institution*: Dr A. Hrdlička, Prof. George G. MacCurdy, Dr. Charles Peabody. *By the American Anthropological Association*: Prof. George G. MacCurdy. *By Yale University*: Prof. George Grant MacCurdy.

Peruvian Antiquities.—As a result of the resolution adopted by the board of managers of the Anthropological Society of Washington on March 23, 1911 (see *American Anthropologist*, April-June, 1911, page 317), copies of which were widely circulated in Peru, the President of that country, on August 11 last, issued a proclamation of which the following is a translation:

The President of the Republic, considering that in order to safeguard the national interests it is necessary to modify the Supreme Decree of the 27th of April, 1893, concerning the gathering and study of Peruvian antiquities, orders as follows:

First. Paragraph second of Article Six of the regulations here mentioned is modified in the following manner: All the remains of the Peruvian aborigines belong to the State, which may concede duplicates of the same to those who ask for the privilege, provided always that such parties be well established scientific corporations. Regarding unique objects, permission can be given only to photograph the same. Casts will be permitted only in those cases in which there is no danger of any damage to the specimens.

Second. In every instance in which permission for excavations or studies is given, there will be named a supervisor ("interventor") who will represent the Government and will superintend the work.

Third. The objects secured will be forwarded by the prefects of the departments to the Museum of National History in this capital [Lima].

Fourth. Before the Congress decides upon a law relating to the conservation of antiquities, there is prohibited absolutely all exportation of the same, whatever may be their class and condition, except in the case of duplicates, as before mentioned.

Those who transgress these regulations will lose all the antiquities which they may endeavor to export, and in addition will suffer a fine of from twenty to two hundred Peruvian pounds in gold, to be imposed by the customs houses of the Republic, which are especially charged with the execution of this duty.

A. B. LEGÍA—ANTONIO FLORES.

Excavations at Meroë.—The Liverpool excavations at Meroë, under the direction of Professor Garstang, assisted by Mr Schliephack, are

making great progress. The palace of the Ethiopian kings, near the temple of Amon, proves to contain more than forty chambers and a large court. On the foundation-walls are reliefs of the usual Ethiopian pattern. Three hundred Sudani natives are now employed, with a staff of trained Egyptian diggers, chiefly fellâhîn from Kuft. A light man-tramway, of the kind commonly utilized in excavations elsewhere (e. g., at Abusir and Deir el-Bahari) to facilitate the removal of the excavated material, has been installed, and to this Professor Garstang has added a small aerial cableway. A telegram from Khartûm describing the progress of the work appeared in *The Times* of January 17; from this the above account is partly taken.—*Nature*, London, January 25.

The Spanish Archives.—The following item of interest to students of the early history of the American Indians appears in *The American Historical Review* for January, 1912: "A visit made by the King of Spain last spring to the Archives of the Indies at Seville has resulted in royal orders for concentrating in that repository all documents relating to the history of the former Spanish dominions beyond the seas, which are now to be found in other archival centres, especially Simancas and Madrid. Adequate space will be made by vacating the lower floor of the Casa Lonja, hitherto used for other purposes, and giving over the whole building to the archives. It is expected that the establishment at Seville of a School for American historical studies will follow. Señor Pedro Torres Lanzas, director of the Archives of the Indies, has recently been promoted to the grade of First Inspector of the archival force of Spain."

Chito Hajo, otherwise known as Crazy Snake, died about April 1st near Boley, Oklahoma, and is reported to have been buried at sunset near the scene of his death in Okfuskee county according to the rites of the primitive members of the Creek Nation. Crazy Snake became prominent at the time of the so-called "smoked meat" rebellion in 1909 by the Snake faction of the Creeks at old Hickory Ground near Henryetta, when he was wounded and his house burned by deputy sheriffs. The old chief escaped to the hills in the Osage country, where he remained in hiding for some time, when he went to Okfuskee county and lived with Charley Coker, a member of the Snake faction. Crazy Snake was a strong advocate of the primitive life, and his death may be regarded as a factor in welding the conservative and progressive elements of the Creeks.

"Current Anthropological Literature."—Pursuant to the action taken by the councils of the American Anthropological Association and the American Folk-Lore Society at the Washington meeting in December

last, a new quarterly journal, to be known as *Current Anthropological Literature*, is to be published under the auspices of the two organizations during 1912, and all book reviews, as well as Dr Chamberlain's reviews of the periodical anthropological literature of the world, will henceforth appear therein instead of in the *American Anthropologist* and *Journal of American Folk-Lore*. The official authorization for the publication of the new quarterly is given on page 150 of this number of the *American Anthropologist*.

Archeology and Art.—The Peabody Museum of Harvard University has installed in the Museum of Fine Arts at Boston a temporary exhibition consisting of a selection from its large collection of objects from Central America. Among the objects in the exhibit perhaps the most striking are the stone sculptures from Copan, including the great seated female figure from the monumental stairway decorated with lines of hieroglyphs; a stone head showing perhaps the very best work "in the round" of the Maya sculptor; a lintel from Piedras Negras, Guatemala, with sculpture in bas-relief and at the same time one of the best examples of a Maya hieroglyphic inscription. Among the examples of work in clay are a wonderfully modeled seated figure of a woman with a second figure resting in her lap. Pottery is shown in painted, incised, and carved designs. There are black dishes with covers and handles representing jaguar heads and those of other animals, from burial vaults beneath the floors of rooms. A remarkable harmony of color is displayed on several pieces of the pottery and on a selection of sherds. The collection is rich in carved jades, showing incised design, bas-relief, and "the round," and ranging in color from black through all the tones of green to almost white. These are all from burial deposits and in many cases seem to have been broken purposely. Carved plaques and carved beads are perhaps the most noteworthy of these objects shown.

The ability of the Mayas and the people of the Isthmus in metal working is shown in the collection of gold and of gold and copper objects. Beaten masks of thin sheets of gold suggest similar Mycenaean objects. Most of the figurines were cast by the *cire perdue* method. The gold and copper bells show a variety of shapes, and the figurines present a surprising ability in metal casting. As with the jades, many of the figures show the result of fire. The skull of a peccary with a beautiful incised design and two carved shell disks show ability on other lines.

Photographs are exhibited which give some idea of the buildings of this Central American culture and many of the larger stone objects still remaining in the ruins. A reproduction of the Dresden codex illustrates

the manuscripts found in connection with this culture. Hanging frames show reproductions of the fresco painting on the walls of a temple in northern Yucatan. Spirited drawings of battle scenes and scenes of domestic life give still another side of this wonderful American civilization.

The exhibition will serve to show visitors ignorant of the field of American archeology that there was something in this country in pre-Columbian times worthy of the name of art, and the plan of the Peabody Museum might well be followed by other institutions if they would fulfill their function completely.

IN the Fifty-fourth Report on the Peabody Museum of American Archaeology and Ethnology, for 1910-11, Prof. F. W. Putnam, honorary curator, gives the following information respecting the proposed addition to the Museum building:

"The Visiting Committee appointed by the Board of Overseers held a meeting in the Museum, on January 12, for the purpose of discussing the possibility of completing the south wing of the University Museum in order to give to the anthropological section the much needed additional room and extended facilities. After a consideration of the plans, which had been prepared under my direction, for closing the gap between our present building and the southwestern corner of the Oxford Street façade, the Committee discussed the form of a report to the Board of Overseers. It was decided that such a report should present the scope, importance, and value of the Museum in its various lines of activity with a statement of its financial condition, and should be accompanied by an appeal to the Overseers on the part of the Committee for the completion of the building at an estimated cost of \$125,000. This report was prepared and signed by the twelve members of the Committee, all of whom are graduates of the University. It was presented by the Chairman, Mr Markham, at the meeting of the Overseers on April 12, 1911."

THE Thirteenth International Congress of Anthropology and Prehistoric Archeology, which met in 1906 at Monaco, designated Dublin as the next place of meeting, but as it was found to be impossible to carry out that plan, the permanent council selected Geneva as the place of meeting of the Fourteenth Congress, and the committee of organization has assigned the first week of September, 1912, as the time of the sessions. In addition to the usual program, excursions will be made to the most important prehistoric sites in Switzerland, where excavations will be conducted in the presence of the members. Full information will be furnished by the president of the committee of organization, M. E.

Pittard, 72 Florissant; or the secretary, M. W. Deonna, 16 Boulevard des Tranchées, Geneva.

DR DAVID CHRISTISON, one of the foremost antiquaries of Scotland, died January 21 in his eighty-second year. Dr Christison was secretary of the Society of Antiquaries of Scotland for sixteen years, from 1888 to 1904; he traveled over a great part of Scotland, making plans of the prehistoric forts and minutely examining them, and the results of his investigations he contributed in many interesting papers to the Society of Antiquaries. About twenty years ago he was Rhind lecturer, and chose as the subject of his course "The Prehistoric Forts of Scotland." These lectures were published in book form. "Early Fortifications in Scotland" was another of his works. In 1867, for the benefit of his health, Dr Christison visited Argentina, on which he wrote a number of papers.

LIEUT. GEORGE T. EMMONS, U.S.N., has been made an honorary fellow of the American Museum of Natural History in recognition of his services in furnishing information in regard to the Indians of the Northwest Coast and in promoting field work in that region, and Dr George Bird Grinnell has been elected an honorary fellow in recognition of his services in the development of the Museum's department of anthropology.

At the tenth annual meeting of the South African Association for the Advancement of Science, to be held at Port Elizabeth from July 1 to 6, Mr W. A. Way will serve as president of Section D, devoted to anthropology, ethnology, education, history, mental science, philosophy, political economy, sociology, and statistics.

THE EIGHTH SESSION of the Congrès Préhistorique de France will be held at Angoulême (Charente), August 18-24, 1912. The president of the committee of organization is Dr Henry Martin, and the general secretary Dr Marcel Baudouin, 21 rue Linné, Paris.

DR WILLIAM T. BRIGHAM, director of the Bernice Pauahi Bishop Museum, Honolulu, has been made a corresponding member of the Imperial Academy of Science, St Petersburg, and of the Senckenbergische Naturforschende Gesellschaft at Frankfurt.

PROF. GEORGE GRANT MACCURDY gave a public lecture in the University Chapel, Columbus, on the evening of March 1 by invitation of Omega Chapter of Sigma Xi of the Ohio State University, his subject being Pre-Columbian Art.

PROF. G. ELLIOT SMITH, F.R.S., has been appointed president of

the Section of Anthropology of the British Association for the Advancement of Science which is to meet at Dundee, beginning September 4th.

A COLLECTION of about 350 oil paintings of Indian subjects by George Catlin has been acquired by the American Museum of Natural History through the gift of Mr Ogden Mills, who procured them from Miss Elizabeth W. Catlin, a daughter of the artist.

To commemorate the signing of the treaty with the Creek Indians at Coleraine, Georgia, June 29, 1796, the Lyman Hall chapter of the Daughters of the American Revolution will place a boulder at Coleraine Landing on June 29th next.

DR ROBERT H. LOWIE, of the American Museum of Natural History, delivered an address, "An Ethnologist in the Field," before the department of natural history of the College of the City of New York on March 21.

THE Third International Congress of Archeology will be held at Rome from October 9 to 12, 1912. The general secretary of the committee is Prof. Lucio Mariani, Piazza Venezia, 11, Rome.

AN anonymous donor has undertaken to give £20,000 to the University of Cambridge, to establish a chair of genetics, to be called the Balfour professorship of genetics, in honor of Mr A. J. Balfour.

PROF. GEORGE GRANT MACCURDY, of Yale University, is installing a hall of European prehistoric archeology for the American Museum of Natural History, in New York.

PROF. ARTHUR KEITH, curator of the museum, began on February 26 a course of six lectures at the Royal College of Surgeons of England, on phases in the evolution of man.

MISS GERDA SEBBELOV has been appointed assistant curator of the section of general ethnology in the Museum of the University of Pennsylvania.

BY THE WILL of Mrs Emily Howe Hitchcock, Dartmouth College will become the possessor of M. Hitchcock's Cesnola collection of Cyprus antiquities.

BY THE WILL of the late Mrs Joseph Drexel the Museum of the University of Pennsylvania has been bequeathed the sum of \$70,000, of which \$20,000 is to be used for making casts.

MR HARLAN I. SMITH has been elected honorary curator of archeology in the American Museum of Natural History.

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THE PSYCHOLOGICAL ASPECTS OF THE CULTURE-ENVIRONMENT RELATION¹

BY CLARK WISSLER

A DISCUSSION of environment and culture from the psychological side is most certain to dip deep into the whole psychological problem underlying culture and will perhaps lead us far afield. At the outset, it may not be amiss to try a very old-fashioned method: the consideration of extreme hypothetical cases. So let us assume for the moment that there is a direct causal relation, or that the physical environment is the sole cause, and culture the effect. If this were true, then what about the life of man? It seems that under such conditions human beings would have little need for intelligence, that quality then being most needed by the environment, since it must needs be the producer. Further, on this assumption, it is not clear how culture could in any way result from conscious processes as we understand that term, but must needs be an unconscious function, or at least an automatic one, like the circulation, assimilation, etc. Of course, our major assumption is here quite fanciful and may be dismissed at once, after having served to call our attention to the importance of the conscious element.

Now, if we face about and assume that all culture is the result of intelligence or conscious activities of the individual mind, what

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then of the environment? Here we imply that cultural traits are all "constructs," ideational creations of the individuals in the group, accumulated and conserved, it is true; but nevertheless conscious constructs in their inception. Now, if we qualify our assumption to imply that such constructs are conceived and born entirely from within the mental life, we seem to have the antithesis of our first assumption. While most of us may be disposed to feel that this is nearer the truth than the former, we must still recognize its possibly extreme character. That the conscious life does construct (produce) we know; but we also find it necessary to admit that external things do play a part. Hence, we may inquire if the reaction point of view cannot be taken as a statement of the culture environment relation. By reaction we mean the conception that external things and relations impress the mind so as to be at least the occasion for return actions. The reaction conception is, of course, a kind of analogy by which all mental processes are considered fundamentally reducible to stimuli and movements, exemplified in the simple reaction phenomena as defined in psychological laboratories. It is doubtful in how far this analogy can be taken as a legitimate inference, but it seems safe to assume that the environment, or things without, do make impressions, and so lead to action. The problem for us is, however, Do such stimuli or impressions determine or modify culture? This is not easily disposed of.

Though it can neither be proved nor disproved, it seems probable that in our mental lives there are various levels between which there is little or no correlation. Thus, it may be that our reactions to mere external stimuli are on a different level from that upon which operate social, artistic, religious, and other activities entering into the cultural complex. This is made probable from our experience with the tests of the psychological laboratory. When these were first discovered it was assumed that we had in hand the means of accurately estimating a person's ability and capacity; but an extended trial brought out the point that there seemed to be no direct relation between the work of our everyday lives and the elemental activities tested. The one seems to be on a different level from

the other. Further, it seems that the analogy between one's work and the culture of a people is close enough to warrant a level hypothesis. Many observations seem to support the existence of such levels in our own lives, at least. Then, if such there be, the chief elements of what we call culture may fall entirely without the direct sphere of reaction to the environment. Again, on the other hand, in so far as the reaction analogy holds, it may be so fundamental that it falls well within the universal human when it ceases to have any significance for culture. Culture is of great variety, and hence must result from activities that tend toward divergent and accidental ends. The marked fundamental psychological uniformity of human minds seems to eliminate all the fundamental psychic elements from the culture problem. Vision, emotion, judgment, etc., must be about the same for all human beings; it is only the products of these activities that appear different. Hence, we must consider the query, Does environment, then, cause these differences by furnishing various cultural materials to the individual ethnic groups? Thus, all we have pointed out above may be true and still give environment the lion's share in determining culture in so far as it furnishes the bricks and mortar for the builders. However, few anthropologists would, we take it, agree that cultures differ, not in plans and the relations of facts, but only in their elements. (It seems that some of my associates, at least, have been rather successfully engaged with those who would hold that all cultures were ordered on the same plan or scheme and that all the differences observed were only those of bricks and mortar.) It is true, however, that the objective materials offered by the environment do influence technology and, it seems, chiefly in the brick and mortar sense. Yet not all of technology is so dependent. Thus, the materials for pottery and other plastic arts are usually at hand in every environment, as are also textile materials. Then, when we turn to religion, social organization, and language, the elements (or materials) in the environment seem too objective (or material) to be taken as the chief materials for such "constructs". But to return to the reaction view of culture and environment: if there is much in this point of view, a person moving to a new

environment should show profound changes in his type of thought and action. We ourselves feel some change when we go elsewhere, but that there is a real cultural change is not admissible. The reactions seem to be on a different level and leave our culture unchanged. We may, therefore, set it down as probable that the stimuli of the environment and the reactions thereto are so fundamentally alike for all human beings that they operate on a different level from the activities that produce culture.

Before facing the consequence of such an assumption we may turn to another problem. Culture is essentially a social product, an accumulation, systematized in some manner. The French school of anthropology seems to have taken the social mind as a very important factor in the production of culture. I think most people have some difficulty in conceiving a social mind: at least, I cannot conceive of it unless it be something like the following. It is difficult to see how one mind alone could arrive at a fund of knowledge worthy of being called culture. Further, almost every invention can with difficulty be assigned to one individual because many minds were directed toward the same problem and more than one ready with the solution. Thus, we seem to have a total result over and above any single mind, an activity of which no one individual can be wholly conscious; whence knowledge seems to be formulated not by any one mind but by many, the aggregate whole of the conscious elements forming something that cannot of itself be conscious, but yet seems to produce elements of culture. In this sense a social mind is intelligible to me. Certainly no one person alone could reach the result.

Now, if culture is so produced, we must again face directly the question as to whether the production of cultural elements is a conscious or an unconscious process. For my part, I doubt its being unconscious. We are often admonished that in language the grammatical structure must have been worked out unconsciously by the group mind because no one is conscious of such an order; but it may be seriously questioned if in their inception all such forms were not the conscious thoughts of individuals. We admit, of course, that no one thought it all out; but, on the other hand, we

believe each new form was first the conscious act of one person. It is said that language is used automatically, and so it is, but a psychologist would find it difficult to conceive of an automatic habit that was not in its beginning certainly conscious. True, the very accumulative nature of culture makes it unnecessary for us to construct and invent anew all its elements, but our question is whether it can be proved that any of these elements were other than conscious productions at the outset.

This brings us to another important problem, the rôle of instinct in culture. It has been customary to conceive of instinct as the antithesis of intellect, but this seems not exactly adequate. Anyway, the relative parts these two kinds of activity play in the lives of animals as well as human beings is one of the world's riddles. Instinct is something we all know perfectly until we try to define it; then it eludes us like the mythical goddess of fate. Yet the problem is real. I feel that many of our problems hinge upon this relation. Let us take for example the making of stone implements, the eoliths and paleoliths, or elementary forms. Now, how was this first chipping done? Was it instinctive, i. e., was it like a bird building a nest or a spider spinning a web? Or was it rational, i. e., a true discovery by one like ourselves? One or the other it must have been. I fancy now that some of you are disposed to say that this is a matter about which it is even foolish to speculate; but is it not true that the whole culture-environment question is in the same category? On the other hand, it is a matter of some importance, for according to your answer will vary your interpretation of culture. If you put this chipping down as instinctive, you must admit that when implements were chipped by modern races (when observed by European explorers) they did it rationally and consciously; hence, there must have been a transition from one to the other and so we ought to find even now vestiges of the instinctive in culture. It is common to assume an evolution of culture from an animal level up, but few seem to have realized the logical difficulty of assigning the lower levels of culture to the instincts.

On the other hand, if we assume at the outset that the making of

the first flaked tool, the kindling of fire, etc., were mere inventions like gunpowder and the match, we throw all culture into the construct or invention category. By this assumption we escape many difficulties and leave the origin of intelligence (the inventor or producer) to the biologist. It is well for us to be aware that our present point of view in anthropology makes the instinctive hypothesis practically impossible, since we do and must interpret the facts of European archeology in the light of modern cultures. We can all admit that man had and has an instinctive tendency to construct or produce cultural traits, which is the same as the psychologist's admission that the tendency to think may be instinctive; but just from that point on intelligence seems in control.

However, this is a knotty problem and not to be settled here and now. Its consideration here is justifiable because it seems to define more clearly the limitations of certain parts of our general cultural problem. If we throw out instinct and hold fast to the conscious "constructs" alone, we have what may be characterized as the psychic accident theory of culture origin as opposed to the developmental or evolutionary theory. The American school seems to have gone over body and soul to the former; that is, its members deny that culture is in the main determined by anything save the aggregate association of ideas. Since it seems that there are no certain goals toward which association leads, nor prescribed directions, except perhaps its past meshes, we may say that the outcome of any associative activity cannot be predicted from anything we know; and that hence it may be said that when an invention occurs, or a "construct" is made, we have a psychic accident. Whether the American school of anthropologists are prepared to defend this definition of their position, I do not know, but I have a mind that, if they decline to stand for it, they will soon find themselves benevolently assimilated by the traditional English school. Returning to the environment question, the American school must by their position oppose the environment factor, or minimize it, since they tend to make culture the product of psychic activities.

For some years there has been a marked tendency on the part of this school to reduce cultural phenomena to what are called

secondary explanations or associations. It is resolved that the games and rituals, myths and rituals, restrictions to marriage in social groups, graphic designs and symbolic ideas, etc., are all nothing more than secondary associations, that is, the sequence of events happened to bring them together as found, or the people, feeling that they should be together, forsooth, put them together. Now, while this undoubtedly marks a great advance in anthropology, I fear that we are, after all, headed up a blind alley. It is very fine to say that all is explained as an association and that hence psychological laws will ultimately solve the problem, but the psychologists seem often to have felt that associations were the irreducible elements of mental phenomena beyond which we could not go. After all, associations are but notions of togetherness regardless of how, when, or why. Most of us are agreed that the ideation process is much the same for all persons, whence it follows that the flux of ideas, the stream of thought, must have the same general characteristics throughout. Hence, the cultural significance of any particular association is not apparent. But to return from this digression, if the American school holds that most cultural phenomena can be adequately explained as secondary associations and ultimately determined by an appeal to the psychological laws of association, then it is to the human mind, and not to environment, that they must look for the origins of culture.

There is yet another consideration: the environment may be psychological or cultural as well as geographical or physical. What we mean is that the respective groups or tribes within an area collectively create for each in turn an environment. It is therefore proper to ask if this is not an environmental factor and a psychic one in contrast to the physical one. Thus in North America regions like the Southwest, the North Pacific coast, etc., occupied by different linguistic and political groups, but nevertheless manifesting sufficient uniformity to be considered as one of our general culture types, present a peculiar problem unless we assume that each and severally the tribes create a psychological cultural environment. Such an analogy strikes us as being the true statement of the culture-environment relation and as suggesting that after all

the physical environment is in most respects a negligible factor. If culture is at bottom but a system of ideas, refined and clarified like mythology by many minds, it is difficult to see how it can be otherwise than practically independent of the external order of things in so far as it is a scheme of relationships among ideas. Turning again to our conception of cultural environment, it seems to give full play to some well-known principles. For example, we all admit that imitation plays an important rôle in the distribution of cultural traits. Psychologically imitation is objective; that is, we see the results of actions on the part of others and attempt to achieve like ends by assuming the same objective relations. Then it seems likely that a group coming into view of another will seek to emulate their achievements (or be in turn the object of emulation), and so copying their acts as seen in the aggregate, will adopt many unnecessary objective forms. Thus we find tribes in the Plains when hunting buffalo adopting the camp circle and soldier band organization of other tribes with numerous unessential details and ceremonial practices, apparently on the assumption that all are useful in attaining the end desired. Further, the strong suggestive power of the performances of others and their almost certain tendency to break into the stream of individual thought is hereby given recognition, for it is difficult to find a case where different cultures have met in force without leaving their marks on each other.

We may summarize this discussion, then, as follows: The solution of the environment problem depends upon our conception of the nature of culture. Some conclusions must be formed as to whether culture is a conscious "construct" or whether it is or was formerly dependent upon specific instincts. It seems that American anthropologists have taken a position involving the conscious constructive origin for cultures as opposed to a sociologic-evolutionary theory. Upon such an assumption it is difficult to see how the mere external world could be an important factor in determining cultures. On the other hand, there seems to be a psychological cultural environment that is a factor of the first importance. The geographical area seems to be a factor only in so far as it tends to offer bounds or

barriers to a cultural environment, but on the other hand, it seems that the inner geographical character of the area has little weight in determining the particular form of culture produced therein, that being dependent upon peculiar psychological conditions and apparently such conditions as are over and above the fundamental human level. Such a view would lift the race problem, for example, out of the psychological into the cultural level, where it seems to belong, and where it is quite probable that many so far unsuspected functional differences exist. Our discussion has suggested the probability that all activities common to all known peoples are by their very nature negligible factors in the formation of cultures, and that therefore it does not follow that because two peoples show no elemental psychological differences there are not other differences that are significant to culture. Indeed, for those who would take the view that all peoples of the world have the same capacity for culture, the cause for the present unequal distribution of culture values must be assigned either to the environment or to the psychic accident or associational relation. On the other hand, it by no means follows that because the latter seems a true statement of culture origin the initial assumption of equal capacity is justified.

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LANGUAGE AND ENVIRONMENT¹

By EDWARD SAPIR

THERE is a strong tendency to ascribe many elements of human culture to the influence of the environment in which the sharers of that culture are placed, some even taking the extreme position of reducing practically all manifestations of human life and thought to environmental influences. I shall not attempt to argue for or against the importance of the influence had by forces of environment on traits of culture, nor shall I attempt to show in how far the influence of environment is crossed by that of other factors. To explain any one trait of human culture as due solely to the force of physical environment, however, seems to me to rest on a fallacy. Properly speaking, environment can act directly only on an individual, and in those cases where we find that a purely environmental influence is responsible for a communal trait, this common trait must be interpreted as a summation of distinct processes of environmental influences on individuals. Such, however, is obviously not the typical form in which we find the forces of environment at work on human groups. In these it is enough that a single individual may react directly to his environment and bring the rest of the group to share consciously or unconsciously in the influence exerted upon him. Whether even a single individual can be truthfully said to be capable of environmental influence uncombined with influences of another character is doubtful, but we may at least assume the possibility. The important point remains that in actual society even the simplest environmental influence is either supported or transformed by social forces. Hence any attempt to consider even the simplest element of culture as due solely to the influence of environment must be termed misleading. The social forces which thus transform the purely environ-

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mental influences may themselves be looked upon as environmental in character in so far as a given individual is placed in, and therefore reacts to, a set of social factors. On the other hand, the social forces may be looked upon, somewhat metaphorically, as parallel in their influence to those of heredity in so far as they are handed down from generation to generation. That these traditional social forces are themselves subject to environmental, among other, changes, illustrates the complexity of the problem of cultural origins and development. On the whole one does better to employ the term "environment" only when reference is had to such influences, chiefly physical in character, as lie outside the will of man. Yet in speaking of language, which may be considered a complex of symbols reflecting the whole physical and social background in which a group of men is placed, it is advantageous to comprise within the term environment both physical and social factors. Under physical environment are comprised geographical characters, such as the topography of the country (whether coast, valley, plain, plateau, or mountain), climate, and amount of rainfall, and what may be called the economic basis of human life, under which term are comprised the fauna, flora, and mineral resources of the region. Under social environment are comprised the various forces of society that mold the life and thought of each individual. Among the more important of these social forces are religion, ethical standards, form of political organization, and art.

According to this classification of environmental influences, we may expect to find two sets of environmental factors reflected in language, assuming for the moment that language is materially influenced by the environmental background of its speakers. Properly speaking, of course, the physical environment is reflected in language only in so far as it has been influenced by social factors. The mere existence, for instance, of a certain type of animal in the physical environment of a people does not suffice to give rise to a linguistic symbol referring to it. It is necessary that the animal be known by the members of the group in common and that they have some interest, however slight, in it before the language of the community is called upon to make reference to this particular

element of the physical environment. In other words, so far as language is concerned, all environmental influence reduces at last analysis to the influence of social environment. Nevertheless it is practical to keep apart such social influences as proceed more or less directly from the physical environment, and those that can not be easily connected with it. Language may be influenced in one of three ways: in regard to its subject matter or content, i. e., in regard to the vocabulary; in regard to its phonetic system, i. e., the system of sounds with which it operates in the building of words; and in regard to its grammatical form, i. e., in regard to the formal processes and the logical or psychological classifications made use of in speech. Morphology, or the formal structure of words, and syntax, or the methods employed in combining words into larger units or sentences, are the two main aspects of grammatical form.

It is the vocabulary of a language that most clearly reflects the physical and social environment of its speakers. The complete vocabulary of a language may indeed be looked upon as a complex inventory of all the ideas, interests, and occupations that take up the attention of the community, and were such a complete thesaurus of the language of a given tribe at our disposal, we might to a large extent infer the character of the physical environment and the characteristics of the culture of the people making use of it. It is not difficult to find examples of languages whose vocabulary thus bears the stamp of the physical environment in which the speakers are placed. This is particularly true of the languages of primitive peoples, for among these culture has not attained such a degree of complexity as to imply practically universal interests. From this point of view the vocabulary of primitive languages may be compared to the vocabularies of particular sections of the population of civilized peoples. The characteristic vocabulary of a coast tribe, such as the Nootka Indians, with its precise terms for many species of marine animals, vertebrate and invertebrate, might be compared to the vocabulary of such European fisher-folk as the Basques of southwestern France and northern Spain. In contrast to such coast peoples may be mentioned the inhabitants of a desert plateau, like the Southern Paiute of Arizona, Nevada, and Utah. In the

vocabulary of this tribe we find adequate provision made for many topographical features that would in some cases seem almost too precise to be of practical value. Some of the topographical terms of this language that have been collected are: divide, ledge, sand flat, semicircular valley, circular valley or hollow, spot of level ground in mountains surrounded by ridges, plain valley surrounded by mountains, plain, desert, knoll, plateau, canyon without water, canyon with creek, wash or gutter, gulch, slope of mountain or canyon wall receiving sunlight, shaded slope of mountain or canyon wall, rolling country intersected by several small hill-ridges, and many others.

In the case of the specialized vocabularies of both Nootka and Southern Paiute, it is important to note that it is not merely the fauna or topographical features of the country as such that are reflected, but rather the interest of the people in such environmental features. Were the Nootka Indians dependent for their food supply primarily on land hunting and vegetable products, despite their proximity to the sea, there is little doubt that their vocabulary would not be as thoroughly saturated as it is with sea lore. Similarly it is quite evident from the presence in Paiute of such topographical terms as have been listed, that accurate reference to topography is a necessary thing to dwellers in an inhospitable semi-arid region; so purely practical a need as definitely locating a spring might well require reference to several features of topographical detail. How far the interest in the physical environment rather than its mere presence affects the character of a vocabulary may be made apparent by a converse case in English. One who is not a botanist, or is not particularly interested for purposes of folk medicine or otherwise in plant lore, would not know how to refer to numberless plants that make up part of his environment except merely as "weeds", whereas an Indian tribe very largely dependent for its food supply on wild roots, seeds of wild plants, and other vegetable products, might have precise terms for each and every one of these nondescript weeds. In many cases distinct terms would even be in use for various conditions of a single plant species, distinct reference being made as to whether it is raw or cooked,

or of this or that color, or in this or that stage of growth. In this way special vocabularies having reference to acorns or camass might be collected from various tribes of California or Oregon. Another instructive example of how largely interest determines the character of a vocabulary is afforded by the terms in several Indian languages for sun and moon. While we find it necessary to distinguish sun and moon, not a few tribes content themselves with a single word for both, the exact reference being left to the context. If we complain that so vague a term fails to do justice to an essential natural difference, the Indian might well retaliate by pointing to the *omnium gatherum* character of our term "weed" as contrasted with his own more precise plant vocabulary. Everything naturally depends on the point of view as determined by interest. Bearing this in mind, it becomes evident that the presence or absence of general terms is to a large extent dependent on the negative or positive character of the interest in the elements of environment involved. The more necessary a particular culture finds it to make distinctions within a given range of phenomena, the less likely the existence of a general term covering the range. On the other hand, the more indifferent culturally are the elements, the more likely that they will all be embraced in a single term of general application. The case may be summarized, if example can summarize, by saying that to the layman every animal form that is neither human being, quadruped, fish, nor bird, is a bug or worm. To this same type of layman the concept and corresponding word "mammal" would, for a converse reason, be quite unfamiliar.

There is an obvious difference between words that are merely words, incapable of further analysis, and such words as are so evidently secondary in formation as to yield analysis to even superficial reflection. A lion is merely a lion, but a mountain-lion suggests something more than the animal referred to. Where a transparent descriptive term is in use for a simple concept, it seems fair in most cases to conclude that the knowledge of the environmental element referred to is comparatively recent, or at any rate that the present naming has taken place at a comparatively recent time. The destructive agencies of phonetic change would in the

long run wear down originally descriptive terms to mere labels or unanalyzable words pure and simple. I speak of this matter here because the transparent or untransparent character of a vocabulary may lead us to infer, if somewhat vaguely, the length of time that a group of people has been familiar with a particular concept. People who speak of lions have evidently been familiar with that animal for many generations. Those who speak of mountain lions would seem to date their knowledge of these from yesterday. The case is even clearer when we turn to a consideration of place-names. Only the student of language history is able to analyze such names as Essex, Norfolk, and Sutton into their component elements as East Saxon, North Folk, and South Town, while to the lay consciousness these names are etymological units as purely as are "butter" and "cheese". The contrast between a country inhabited by an historically homogeneous group for a long time, full of etymologically obscure place-names, and a newly settled country with its Newtowns, Wildwoods, and Mill Creeks, is apparent. Naturally much depends on the grammatical character of the language itself; such highly synthetic forms of speech as are many American Indian languages seem to lose hold of the descriptive character of their terms less readily than does English, for instance.

We have just seen that the careful study of a vocabulary leads to inferences as to the physical and social environment of those who use the vocabulary; furthermore, that the relatively transparent or untransparent character of the vocabulary itself may lead us to infer as to the degree of familiarity that has been obtained with various elements of this environment. Several students, notably Schrader, in dealing with Indo-Germanic material, have attempted to make a still more ambitious use of the study of vocabularies of related languages. By selecting such words as are held in common by all, or at least several, of a group of genetically related languages, attempts have been made to gather some idea of the vocabulary of the hypothetical language of which the forms of speech investigated are later varieties, and in this way to get some idea of the range of concepts possessed by the speakers of the reconstructed

language. We are here dealing with a kind of linguistic archeology. Undoubtedly many students of Indo-Germanic linguistics have gone altogether too far in their attempts to reconstruct culture from comparative linguistic evidence, but the value of evidence obtained in this way can not be summarily denied, even granted that words may linger on long after their original significance has changed. The only pity is that in comparing languages that have diverged very considerably from each other, and the reconstructed prototype of which must therefore point to a remote past, too little material bearing on the most interesting phases of culture can generally be obtained. We do not need extended linguistic comparison to convince us that at a remote period in the past people had hands and fathers, though it would be interesting to discover whether they knew of the use of salt, for instance. Naturally the possibility of secondary borrowing of a word apparently held in common must always be borne in mind. Yet, on the whole, adequate knowledge of the phonology and morphology of the languages concerned will generally enable a careful analyst to keep apart the native from the borrowed elements. There has been too little comparative linguistic work done in America as yet to enable one to point to any considerable body of tangible results of cultural interest derived from such study, yet there is little doubt that with more intensive study such results will be forthcoming in greater degree. Surely a thoroughgoing study of Algonkin, Siouan, and Athabaskan vocabularies from this point of view will eventually yield much of interest. As a passing example of significance, I shall merely point out that Nahua *oco-tl*, "Pinus tenuifolia", and Southern Paiute *oyó-mp'^U*, "fir", point to a Uto-Aztekan stem *oko-* that has reference to some variety of pine or fir.

If the characteristic physical environment of a people is to a large extent reflected in its language, this is true to an even greater extent of its social environment. A large number, if not most, of the elements that make up a physical environment are found universally distributed in time and place, so that there are natural limits set to the variability of lexical materials in so far as they give expression to concepts derived from the physical world. A

culture, however, develops in numberless ways and may reach any degree of complexity. Hence we need not be surprised to find that the vocabularies of peoples that differ widely in character or degree of culture share this wide difference. There is a difference between the rich, conceptually ramified vocabulary of a language like English or French and that of any typical primitive group, corresponding in large measure to that which obtains between the complex culture of the English-speaking or French-speaking peoples of Europe and America with its vast array of specialized interests, and the relatively simple undifferentiated culture of the primitive group. Such variability of vocabulary, as reflecting social environment, obtains in time as well as place; in other words, the stock of cultural concepts and therefore also the corresponding vocabulary become constantly enriched and ramified with the increase within a group of cultural complexity. That a vocabulary should thus to a great degree reflect cultural complexity is practically self-evident, for a vocabulary, that is, the subject matter of a language, aims at any given time to serve as a set of symbols referring to the culture background of the group. If by complexity of language is meant the range of interests implied in its vocabulary, it goes without saying that there is a constant correlation between complexity of language and culture. If, however, as is more usual, linguistic complexity be used to refer to degree of morphologic and syntactic development, it is by no means true that such a correlation exists. In fact, one might almost make a case for an inverse correlation and maintain that morphologic development tends to decrease with increase of cultural complexity. Examples of this tendency are so easy to find that it is hardly worth our while going into the matter here. It need merely be pointed out that the history of English and French shows a constant loss in elaborateness of grammatical structure from their earliest recorded forms to the present. On the other hand, too much must not be made of this. The existence of numerous relatively simple forms of speech among primitive peoples discourages the idea of any tangible correlation between degree or form of culture and form of speech.

Is there, then, no element of language but its mere concrete sub-

ject matter or vocabulary that can be shown to have any relation to the physical and social environment of the speakers? It has sometimes been claimed that the general character of the phonetic system of a language is more or less dependent on physical environment, that such communities as dwell in mountainous regions or under other conditions tending to make the struggle for existence a difficult one develop acoustically harsh forms of speech, while such as are better favored by nature make use of relatively softer phonetic systems. Such a theory is as easily disproved as it seems plausible. It is no doubt true that examples may be adduced of harsh phonetic systems in use among mountaineers, as for instance those of various languages spoken in the Caucasus; nor is it difficult to find instances of acoustically pleasant forms of speech in use among groups that are subjected to a favorable physical environment. It is just as easy, however, to adduce instances to the contrary of both of these. The aboriginal inhabitants of the Northwest Coast of America found subsistence relatively easy in a country abounding in many forms of edible marine life; nor can they be said to have been subjected to rigorous climatic conditions; yet in phonetic harshness their languages rival those of the Caucasus. On the other hand, perhaps no people has ever been subjected to a more forbidding physical environment than the Eskimos, yet the Eskimo language not only impresses one as possessed of a relatively agreeable phonetic system when compared with the languages of the Northwest Coast, but may even perhaps be thought to compare favorably with American Indian languages generally. There are many cases, to be sure, of distinct languages with comparable phonetic systems spoken over a continuous territory of fairly uniform physical characteristics, yet in all such cases it can readily be shown that we are dealing not with the direct influence of the environment itself, but with psychological factors of a much subtler character, comparable perhaps to such as operate in the diffusion of cultural elements. Thus the phonetic systems of Tlingit, Haida, Tsimshian, Kwakiutl, and Salish are not similar because belonging to languages whose speakers are placed in about the same set of environmental conditions, but merely because these speakers are geographically contiguous to

each other and hence capable of exerting mutual psychological influence.

Leaving these general considerations on the lack of correlation between physical environment and a phonetic system as a whole we may point to several striking instances, on the one hand, of phonetic resemblances between languages spoken by groups living in widely different environments and belonging to widely different cultural strata, on the other hand, of no less striking phonetic differences that obtain between languages spoken in adjoining regions of identical or similar environment and sharing in the same culture. These examples will serve to emphasize the point already made. The use of pitch accent as a significant element of speech is found in Chinese and neighboring languages of southeastern Asia, Ewe and other languages of western Africa, Hottentot in South Africa, Swedish, Tewa in New Mexico, and Takelma in south-western Oregon. In this set of instances we have illustrated practically the whole gamut of environmental and cultural conditions. Nasalized vowels occur not only in French and Portuguese, but also in Ewe, Iroquois, and Siouan. "Fortis" consonants, i. e., stop consonants pronounced with simultaneous closure and subsequent release of glottal cords, are found not only in many languages of America west of the Rockies, but also in Siouan, and in Georgian and other languages of the Caucasus. Glottal stops as significant elements of speech are found not only plentifully illustrated in many, perhaps most, American Indian languages, but also in Danish and in Lettish, one of the Letto-Slavic languages of Western Russia. So highly peculiar sounds as the hoarse *hâ* and strangulated-sounding 'ain of Arabic are found in almost identical form in Nootka. And so on indefinitely. On the other hand, while the English and French may, on the whole, be said to be closely related culturally, there are very striking differences in the phonetic systems made use of by each. Turning to aboriginal America, we find that two such closely related groups of tribes, from a cultural standpoint, as the Iroquois and neighboring eastern Algonkins speak widely different languages, both phonetically and morphologically. The Yurok, Karok, and Hupa, all three occupying a small territory

in northwestern California, form a most intimate cultural unit. Yet here again we find that the phonetic differences between the languages spoken by these tribes are great, and so on indefinitely again. There seems nothing for it, then, but to postulate an absolute lack of correlation between physical and social environment and phonetic systems, either in their general acoustic aspect or in regard to the distribution of particular phonetic elements.

One feels inclined to attribute a lack of correlation between phonetic system and environment to the comparatively accidental character of a phonetic system in itself; or, to express it somewhat more clearly, to the fact that phonetic systems may be thought to have a quasi-mechanical growth, at no stage subject to conscious reflection and hence not likely in any way to be dependent on environmental conditions, or, if so, only in a remotely indirect manner. Linguistic morphology, on the other hand, as giving evidence of certain definite modes of thought prevalent among the speakers of the language, may be thought to stand in some sort of relation to the stock of concepts forming the mental stock in trade, as it were, of the group. As this stock of concepts, however, is necessarily determined by the physical and social environment, it follows that some sort of correlation between these environments and grammatical structure might be looked for. And yet the negative evidence is as strong in this case as in the parallel one just disposed of. We may consider the subject matter of morphology as made up of certain logical or psychological categories of thought that receive grammatical treatment and of formal methods of expressing these. The distinct character of these two groups of morphological phenomena may be illustrated by pointing out that neighboring languages may influence, or at any rate resemble, each other in the one set without necessary corresponding influence or resemblance in the other. Thus, the device of reduplication is widespread in American Indian languages, yet the concepts expressed by this method vary widely. Here we deal with a widespread formal device as such. Conversely, the notion of inferential activity, that is, of action, knowledge of which is based on inference rather than personal authority is also found widely expressed in American languages, but

by means of several distinct formal processes. Here we deal with a widespread grammatically utilized category of thought as such.

Now, in rummaging through many languages one finds numerous instances both of striking similarities in the formal processes of morphology and of striking similarities or identities of concepts receiving grammatical treatment, similarities and identities that seem to run in no kind of correspondence to environmental factors. The presence of vocalic changes in verb or noun stems in Indo-Germanic languages, Semitic, Takelma, and Yana may be given as an example of the former. A further example is the presence of the infixation of grammatical elements in the body of a noun or verb stem in Malayan, Mon-Khmer, and Siouan. It will be noticed that despite the very characteristic types of formal processes that I have employed for illustrative purposes they crop up in markedly distinct environments. A striking example, on the other hand, of a category of thought of grammatical significance found irregularly distributed and covering a wide range of environments, is grammatical gender based on sex. This we find illustrated in Indo-Germanic, Semitic, Hottentot of South Africa, and Chinook of the lower Columbia. Other striking examples are the existence of syntactic cases, primarily subjective and objective, in Indo-Germanic, Semitic, and Ute; and the distinction between exclusive and inclusive duality or plurality of the first person found in Kwakiutl, Shoshonean, Iroquois, Hottentot, and Melanesian.

The complementary evidence for such lack of correlation as we have been speaking of is afforded by instances of morphologic differences found in neighboring languages in use among peoples subjected to practically the same set of environmental influences, physical and social. A few pertinent examples will suffice. The Chinook and Salish tribes of the lower Columbia and west coast of Washington form a cultural unit set in a homogeneous physical environment, yet far-reaching morphologic differences obtain between the languages of the two groups of tribes. The Salish languages make a superabundant use of reduplication for various grammatical purposes, whereas in Chinook reduplication, though occurring in a limited sense, has no grammatical significance. On the other hand, the system of sex gender rigidly carried out in the

noun and verb system of Chinook is shared by the Coast Salish dialects only in so far as pronominal articles are found to express distinctions of gender, while the interior Salish languages lack even this feature entirely. Perhaps an even more striking instance of radical morphological dissimilarity in neighboring languages of a single culture area is afforded by Yana and Maidu, spoken in north central California. Maidu makes use of a large number of grammatical prefixes and employs reduplication for grammatical purposes to at least some extent. Yana knows nothing of either prefixes or reduplication. On the other hand, Maidu lacks such characteristic Yana features as the difference in form between the men's and women's language, and the employment of several hundreds of grammatical suffixes, some of them expressing such concrete verbal force as to warrant their being interpreted rather as verb stems in secondary position than as suffixes proper. To turn to the Old World, we find that Hungarian differs from the neighboring Indo-Germanic languages in its lack of sex gender and in its employment of the principle of vocalic harmony, a feature which, though primarily phonetic in character, nevertheless has an important grammatical bearing.

In some respects the establishment of failure of phonetic and morphologic characteristics of a language to stand in any sort of relation to the environment in which it is spoken seems disappointing. Can it be, after all, that the formal groundwork of a language is no indication whatsoever of the cultural complex that it expresses in its subject matter? If we look more sharply, we shall find in certain cases that at least some elements that go to make up a cultural complex are embodied in grammatical form. This is true particularly of synthetic languages operating with a large number of prefixes or suffixes of relatively concrete significance. The use in Kwakiutl and Nootka, for instance, of local suffixes defining activities as taking place on the beach, rocks, or sea, in cases where in most languages it would be far more idiomatic to omit all such reference, evidently points to the nature of the physical environment and economic interests connected therewith among these Indians. Similarly, when we find that such ideas as those of buying, giving a feast of some kind of food, giving a potlatch for some person, and

asking for a particular gift at a girl's puberty ceremony, are expressed in Nootka by means of grammatical suffixes, we are led to infer that each of these acts is a highly typical one in the life of the tribe, and hence constitute important elements in its culture. This type of correlation may be further exemplified by the use in Kwakiutl, Nootka, and Salish of distinct series of numerals for various classes of objects, a feature which is pushed to its greatest length, perhaps, in Tsimshian. This grammatical peculiarity at least suggests definite methods of counting, and would seem to emphasize the concept of property, which we know to be so highly developed among the West Coast Indians. Adopting such comparatively obvious examples as our cue, one might go on indefinitely and seize upon any grammatical peculiarity with a view to interpreting it in terms of culture or physical environment. Thus, one might infer a different social attitude toward woman in those cases where sex gender is made grammatical use of. It needs but this last potential example to show to what flights of fancy this mode of argumentation would lead one. If we examine the more legitimate instances of cultural-grammatical correlation, we shall find that it is not, after all, the grammatical form as such with which we operate, but merely the content of that form; in other words, the correlation turns out to be, at last analysis, merely one of environment and vocabulary, with which we have already become familiar. The main interest morphologically in Nootka suffixes of the class illustrated lies in the fact that certain elements used to verbify nouns are suffixed to noun stems. This is a psychological fact which can not well be correlated with any fact of culture or physical environment that we know of. The particular manner in which a noun is verbified, or the degree of concreteness of meaning conveyed by the suffix, are matters of relative indifference to a linguist.

We seem, then, perhaps reluctantly, forced to admit that, apart from the reflection of environment in the vocabulary of a language, there is nothing in the language itself that can be shown to be directly associated with environment. One wonders why, if such be the case, so large a number of distinct phonetic systems and types of linguistic morphology are found in various parts of the world. Perhaps the whole problem of the relation between culture and

environment generally, on the one hand, and language, on the other, may be furthered somewhat by a consideration simply of the rate of change or development of both. Linguistic features are necessarily less capable of rising into the consciousness of the speakers than traits of culture. Without here attempting to go into an analysis of this psychological difference between the two sets of phenomena, it would seem to follow that changes in culture are the result, to at least a considerable extent, of conscious processes or of processes more easily made conscious, whereas those of language are to be explained, if explained at all, as due to the more minute action of psychological factors beyond the control of will or reflection. If this be true, and there seems every reason to believe that it is, we must conclude that cultural change and linguistic change do not move along parallel lines and hence do not tend to stand in a close causal relation. This point of view makes it quite legitimate to grant, if necessary, the existence at some primitive stage in the past of a more definite association between environment and linguistic form than can now be posited anywhere, for the different character and rate of change in linguistic and cultural phenomena, conditioned by the very nature of those phenomena, would in the long run very materially disturb and ultimately entirely eliminate such an association.

We may conceive, somewhat schematically, the development of culture and language to have taken place as follows: A primitive group, among whom even the beginnings of culture and language are as yet hardly in evidence, may nevertheless be supposed to behave in accordance with a fairly definite group psychology, determined, we will suppose, partly by race mind, partly by physical environment. On the basis of this group psychology, whatever tendencies it may possess, a language and a culture will slowly develop. As both of these are directly determined, to begin with, by fundamental factors of race and physical environment, they will parallel each other somewhat closely, so that the forms of cultural activity will be reflected in the grammatical system of the language. In other words, not only will the words themselves of a language serve as symbols of detached cultural elements, as is true of languages at all periods of development, but we may suppose the

grammatical categories and processes themselves to symbolize corresponding types of thought and activity of cultural significance. To some extent culture and language may then be conceived of as in a constant state of interaction and definite association for a considerable lapse of time. This state of correlation, however, can not continue indefinitely. With gradual change of group psychology and physical environment more or less profound changes must be effected in the form and content of both language and culture. Language and culture, however, are obviously not the direct expression of racial psychology and physical environment, but depend for their existence and continuance primarily on the forces of tradition. Hence, despite necessary modifications in either with the lapse of time, a conservative tendency will always make itself felt as a check to those tendencies that make for change. And here we come to the crux of the matter. Cultural elements, as more definitely serving the immediate needs of society and entering more clearly into consciousness, will not only change more rapidly than those of language, but the form itself of culture, giving each element its relative significance, will be continually shaping itself anew. Linguistic elements, on the other hand, while they may and do readily change in themselves, do not so easily lend themselves to regroupings, owing to the subconscious character of grammatical classification. A grammatical system as such tends to persist indefinitely. In other words, the conservative tendency makes itself felt more profoundly in the formal groundwork of language than in that of culture. One necessary consequence of this is that the forms of language will in course of time cease to symbolize those of culture, and this is our main thesis. Another consequence is that the forms of language may be thought to more accurately reflect those of a remotely past stage of culture than the present ones of culture itself. It is not claimed that a stage is ever reached at which language and culture stand in no sort of relation to each other, but simply that the relative rates of change of the two differ so materially as to make it practically impossible to detect the relationship.

Though the forms of language may not change as rapidly as those of culture, it is doubtless true that an unusual rate of cultural change is accompanied by a corresponding accelerated rate of

change in language. If this point of view be pushed to its legitimate conclusion, we must be led to believe that rapidly increasing complexity of culture necessitates correspondingly, though not equally rapid, changes in linguistic form and content. This view is the direct opposite of the one generally held with respect to the greater conservatism of language in civilized communities than among primitive peoples. To be sure, the tendency to rapid linguistic change with increasingly rapid complexity of culture may be checked by one of the most important elements of an advanced culture itself, namely, the use of a secondary set of language symbols necessarily possessing greater conservatism than the primarily spoken set of symbols and exerting a conservative influence on the latter. I refer to the use of writing. In spite of this, however, it seems to me that the apparent paradox that we have arrived at contains a liberal element of truth. I am not inclined to consider it an accident that the rapid development of culture in western Europe during the last 2000 years has been synchronous with what seems to be unusually rapid changes in language. Though it is impossible to prove the matter definitely, I am inclined to doubt whether many languages of primitive peoples have undergone as rapid modification in a corresponding period of time as has the English language.

We have no time at our disposal to go more fully into this purely hypothetical explanation of our failure to bring environment and language into causal relation, but a metaphor may help us to grasp it. Two men start on a journey on condition that each shift for himself, depending on his own resources, yet traveling in the same general direction. For a considerable time the two men, both as yet unwearied, will keep pretty well together. In course of time, however, the varying degrees of physical strength, resourcefulness, ability to orient oneself, and many other factors, will begin to manifest themselves. The actual course traveled by each in reference to the other and to the course originally planned will diverge more and more, while the absolute distance between the two will also tend to become greater and greater. And so with many sets of historic sequences which, at one time causally associated, tend in course of time to diverge.

THE TEWA INDIAN GAME OF "CAÑUTE"

By JOHN P. HARRINGTON

INTRODUCTION

IT is a peculiar feature of the study of prehistoric remains in southwestern United States that archeology and ethnology must proceed hand in hand. The archeologist is here forced to become an ethnologist, and *vice versa*. Almost everything of archeological interest that has been found in this area can be explained and interpreted by the Pueblo Indian of the present day. To illustrate this fact we need only mention an incident that occurred last summer during the excavation of the Chuoñi pueblo ruin, in the Rito de los Frijoles, west of Santa Fé, New Mexico, conducted by the School of American Archaeology. Two peculiar stone balls, each about four inches in diameter, were discovered. None of the archeologists present could explain their usage. Two of the Indian workmen, however, upon seeing the stones, said with a grin, "k'u'mbewe'ε'k'u", 'round stone game stones', and straight-way began playing a most interesting ancient game. Such close connection between the modern and ancient cultures of this region increases the value of both archeological and ethnological studies.

Indeed, so important from the archeologist's standpoint is the immediate investigation of the strange Indian peoples still inhabiting the Southwest that one is tempted here to "take his archeology alive," as Mr Charles F. Lummis says. Protect the ruins and let them slumber on; and until there are more workers in this field let us devote our energies largely to studying the life and language of the surviving Indians, whose ancient culture is rapidly being destroyed by schools, missionaries, whisky, and general contact with the whites. The archeology can wait, the ethnology can not.

Objects used in games have been found in many of the ruins of the Southwest. We need only instance the stone balls referred to above, or the game-sticks found in one of the ruins near the

Hopi villages and described by Fewkes.¹ Of the modern Pueblo game described in the following pages archeologists have thus far found no trace, but we have considered it worth studying nevertheless, so that we shall be able to explain it when it is discovered in the ruins, as it probably will be. The graphic symbolism connected with this game will also be of importance to investigators in connection with Pueblo pictographs, pottery designs, and the like, ancient and modern.

Mr Stewart Culin, in his *Games of the North American Indians*,² devotes pages 335 to 382 to a discussion of what he terms the "hidden ball game," which occurs in varying forms among many of the American tribes. Mr Culin classifies the Tewa "cañute", which we describe in this paper, as a variety of this hidden ball game.

We have rather elaborate accounts of this Pueblo game as played at Zuñi, where it has been observed and described by Mr Cushing³ and by Mrs Stevenson⁴ as a game sacred to the War Gods, the playing of which in one of the plazas of Zuñi constituted in olden days one of the most important ceremonial features of February and March. Although this elaborate form of the game played at Zuñi differs in important details from the simple Tewa game that we are about to describe, there can be no doubt that the two are genetically the same. The present simplicity and lack of religious signification in the Tewa game may be due to Mexican acculturation of the villagers who play it, or it may be that the Tewa game has always been deficient in ritualistic associations. The Tewa game has been studied by the present writer at one of the Tewa villages only, at San Ildefonso (*P'c qwc gè*), which is situated at the confluence of Pojoaque creek with the Rio Grande, twenty miles northwest of Santa Fé, New Mexico. The same game as played at the neighboring Tewa village of Santa Clara (*K'a'p'c*),

¹ J. W. Fewkes, *Two Summers' Work in Pueblo Ruins*, 22d Ann. Rep. B. A. E., pp. 100-107.

² Stewart Culin, *Games of the North American Indians*, 24th Ann. Rep. B. A. E., Washington, 1907.

³ Ibid., pp. 374-381.

⁴ Ibid., pp. 381-382, and M. C. Stevenson, *The Zuñi Indians*, 23d Ann. Rep. B. A. E., pp. 333-341.

has been outlined by Mr Thomas S. Dozier,¹ but many details, including the wonderful figures made by the players by variously arranging the game-sticks, have not previously been described. The student is continually surprised at the wealth and intricacy of institutions discoverable among the Pueblo Indians. No fewer than fifty-nine figures made by the San Ildefonsoños while playing "cañute" have been photographed and otherwise recorded, and the study of these figures may throw some light on Pueblo designs and on designs and symbolization in general.

Thanks are due to the School of American Archaeology and the Bureau of American Ethnology, Miss Frances Densmore, Dr H. J. Spinden, Dr P. E. Goddard, Mr K. M. Chapman, Mr J. C. Nusbaum, and the Indians for help received in various ways.

Phonetics

It is necessary to preface the description of the game with a key to the Tewa sounds and the symbols adopted to represent them. Positionally there are seven classes of phonemes in Tewa.

1. Orinatal vowels, pronounced with mouth and nose passages open: *ɑ* (Eng. father, but orinatal), *ã* (Eng. man, but orinatal), *ɛ* (mod. Greek *ε*, but orinatal), *j* (Portuguese *sim*), *ɔ* (French *pas*, but orinatal), *ɛ* (Portuguese *tom*), *u* (Portuguese *atum*).

2. Oral vowels, pronounced with mouth passage open and nose passage closed by the velum: *a* (Eng. father), *e* (mod. Greek *ε*), *i* (Eng. routine), *o* (mod. Greek *ω*), *u* (Eng. rule).

An inverted period after a vowel symbol indicates that the vowel is long. A superior vowel symbol indicates that the vowel is very short and grating (*knarrstimmig*). The vowels are breathy, and unless followed by the glottal stop, a glottalized stop, or a voiced sound, an aspiration is distinctly heard toward the end.

3. Semi-vowels: *j* (Ger. *ja*, but very fricative), *w* (Eng. way).

4. Laryngeal consonants: *h* (laryngeal *h*), *ʔ* (glottal stop, *lénis*).

5. Dorsal consonants: *k* (voiceless *lénis*), *kw* (voiceless *lénis* labialized, Latin *guis*), *kʰ* (glottalized), *kʰ* (aspirated), *ŋg* (Eng. finger, voiced inflative *g* preposively nasal), *g* (Castilian *abogado*), *gw* (Castilian *juez*), *ŋ* (Eng. song), *ŋw* (Eng. Langworthy).

¹ Stewart Culin. *op. cit.*, pp. 368-369.

6. Frontal consonants: \tilde{n} (Castilian *mañana*), t (voiceless lēnis), t' (glottalized), t' (aspirated), nd (Eng. *landing*, inflative d preposively nasal), λ (Japanese *roku*), ts (Ger. *zehn*, but very lēnis), ts' (Ger. *z*, glottalized), s (Eng. *saw*), tsf (Eng. *chew* but lēnis), tsf' (Eng. *chew*, glottalized), f (Eng. *ship*), n (Eng. *now*).

7. Labial consonants: p (voiceless lēnis), p' (glottalized), p' (aspirated), mb (Eng. *lambent*, voiced inflative b preposively nasal), b (Castilian *caballo*), m (Eng. *man*).

The sound of t is heard in some words of foreign origin, and in San Ildefonso *pclamimi*, 'butterfly'.

The consonants may also be classified as follows:

Voiced constringents: j , w .

Voiceless fricatives: h , s , f .

Voiceless fricatives labialized: qw .

Voiceless lēnis sonoplosive stops, labialized: kw .

Voiceless glottalized stops: k' , t' , p' .

Voiceless lēnis affricative stops: ts , tsf .

Voiceless glottalized affricative stops: ts' , tsf' .

Voiceless aspirate stops: k' , t' , p' .

Voiced inflative stops, preposively nasal: ηg , nd , mb .

Voiced lēvis stops: g , d , b .

Voiced nasals: η , \tilde{n} , n , m .

The following phonemes are consonant diphthongs: qw , kw , ts , ts' , tsf , tsf' , ηg , nd , and mb . In the glottalized stops (k' , t' , ts' , tsf' , p') the glottal plosion follows the oral plosion, even following the glided or sukūned s and f of the consonantal diphthongs. That is, the k , t , ts , tsf , or p is completely "immersed" in a glottal stop. It has been determined that, at least in many instances, ηg and g , nd and d , mb and b are respectively but two aspects of the same phonem, as is the case with Castilian g and lēvis g , d and lēvis d , b and lēvis b . The consonants occur probably in one length only. They may be more or less orinasal when contiguous to orinasal vowels. The sonancy of the voiceless lēnis stops appears to begin nearly simultaneously with the explosion if a voiced sound follows.

A grave accent is placed over the vowel of a syllable weakly stressed. Strongly stressed syllables are unmarked. The intonation of the syllables is not indicated in this paper.

THE NAME OF THE GAME

The Tewa name for the game is *kac'ε'p'ε'ε'*. The Tewa word meaning 'game played' is 'ε', and 'ε'p'ε means 'game-stick' or 'game-sticks.' The verb meaning 'to conceal' is *kac*. *Kac'ε'p'ε* means literally 'conceal-game-stick,' and *kac'ε'p'ε'ε'* means 'conceal-game-stick-game,' referring to the four hollow sticks that constitute the principal paraphernalia of the game. The game is called in Spanish *cañute*, a word connected with *caña*, 'cane', 'reed', *caño*, 'tube', and *cañuto*, 'internode of a cane or reed'. The Tewa pronunciation of Spanish *cañute* is *kəñytk*. A player of the game is called in Tewa *kac'ε'p'ε'ε'sε'η*, plural *kac'ε'p'ε'ε'sε'ηñ*, *sε'η* meaning 'man'; and in Spanish *cañutero*, Tewa pronunciation *kəñytsu*.¹

THE STICKS

The game is played with four cylindrical, hollow sticks, which might also be called tubes or cups (see fig. 21). The Tewa name for them is *p'ε*, 'sticks,' and therefore we call them sticks in this paper. These sticks are at present made of soft wood, usually of pine (ητοῦ η) or valley cottonwood (τε'). One set of sticks found in use at San Ildefonso was made from an old spade handle; another was made from an old window curtain roller. No sticks made of cane or reed could be discovered by the writer at San Ildefonso. No suitable cane or reed grows near the village. But the Indians state that in earlier times sets of the sticks were made exclusively of a kind of cane called in Tewa *pc* or *pc'su* and in Spanish *carrizo*, probably *Phragmites phragmites*, which then grew along the Rio Grande by San Ildefonso. They state that, since the Mexicans came, valley cottonwood (τε', *Populus wislizeni*), aspen (nññ, *Populus tremuloides*), and other kinds of wood have been employed

¹ The frequent use of the name *cañute* even by the Indians has led Mr Dozier to the entirely unwarranted conclusion that the game is not Tewa in origin. He writes (Culin, op. cit., p. 369): "This is undoubtedly an Indian game, though it cannot have originated among the Tewan pueblos [!]. It is known among them as *cañute*, a name certainly coming from the Spanish *caña*, reed. This same name obtains among the Utes and Apaches, tribes closely associated with the Pueblos."

for making the game-sticks. Sticks of cane are still used at Jemez (see the reed sticks in fig. 21).

The length of the sticks varies from four inches to a foot or more, the diameter from a quarter of an inch to two inches or more. The pine sticks obtained at San Ildefonso which are shown in fig. 21 measure as follows: length, $8\frac{1}{4}$ "; diameter, $1\frac{3}{8}$ "; diameter of holes,

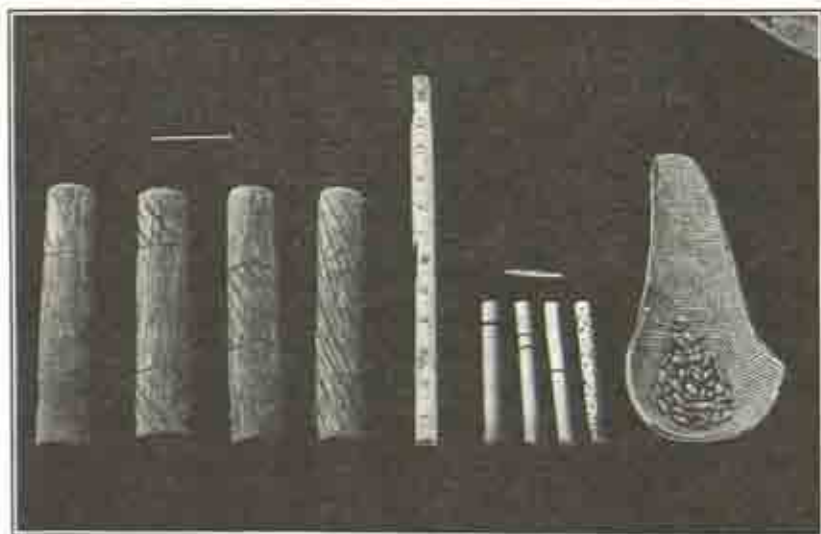


FIG. 21.—San Ildefonso cañute sticks at right. Jemez cañute sticks at left. Pins above sticks. Beans used as counters at extreme right.

$\frac{1}{2}$ "; depth of holes, $6\frac{1}{2}$ ", width of bandings, $2\frac{3}{4}$ ". The reed sticks from Jemez shown in the same figure measure $4\frac{1}{2}$ " in length and $\frac{3}{8}$ " in diameter.

The cane sticks were shaped with knives or similar tools. The holes in the wooden sticks are now burned by means of a hot iron, sometimes a spike, which is held by being inserted into or bound to a piece of wood. The holes are usually of irregular surface and the pin that is hidden in them may get stuck in them, which vexes the players and sometimes even spoils the game.

The exterior surface of both the cane and the wooden sticks is always ornamented with certain markings, which are and were

burnt, now by means of a hot iron, usually a piece of wire or a branding iron, or something of sharper edge than the spike that is used in burning out the holes of the wooden sticks. Formerly, they think, the designs were either burnt with a heated stone of some sort, or else they were scratched and pigment rubbed in.

The sticks are distinguished by these exterior markings as follows. Reference should be had to the accompanying photographic halftone of two sets of the sticks (fig. 21).

1. *Wi'jñ(p'ε)*, 'the "one" (stick)' (*wi*, one, numeral noun; *jñ*, connective particle, vegetal gender, singular number; *p'ε*, stick); rarely called also *wi'iwē'jñ(p'ε)*, 'the (stick) (banded) at one place' (*wi*, one, numeral noun; *iwē*, locative postfix; *jñ*, connective particle as above; *p'ε*, stick). This stick is called in Spanish "*el uno*". This stick is always banded at one end of its lateral surface, usually at the end at which the hole opens. Across the end at which the hole does not open there usually runs a single straight line. Mr Dozier's "*wēpi*"¹ is entirely wrong. He means, of course, *wēpi*, 'one,' numeral noun of vegetal gender. The expression *wēpi p'ε* would mean 'one stick', not 'the "one" stick'.

2. *Wijē'jñ(p'ε)*, 'the "two" (stick)' (*wijē*, two, numeral noun; *jñ*, connective particle, vegetal gender, singular number; *p'ε*, stick); rarely called also *wigē'jñ(p'ε)*, 'the (stick) (banded) at two places' (*wigē*, at two places, locative form of the numeral noun *wijē*, two; *jñ*, connective particle, as above; *p'ε*, stick). This stick is called in Spanish "*el dos*", often in Tewa pronunciation *'ε ndc*. This stick is always banded at both ends of its lateral surface. Across the end at which the hole does not open there usually run two parallel straight lines. Mr Dozier's "*wē'-qī*"¹ is meant for *wigē'jñ*.

3. *Ti'jñ(p'ε)*, 'the swollen (stick)' (*ti*, swollen; *jñ*, connective particle, vegetal gender, singular number; *p'ε*, stick). This stick is called in Spanish "*el hinchado*", in Tewa pronunciation *'jīsaḏ*. *Hinchado* is the past participle, masculine-neuter gender, of the verb *hincar*, 'to swell'. The idea present in the minds of the

¹ Stewart Culin, op. cit., p. 369.

Indians who call it thus is that the stick is swollen in the middle because it is banded in the middle. The banding in the middle, especially when it consists of diagonal stripings, produces a swollen effect. The stick looks larger in the middle than it does at the ends, just as the "two" stick looks larger at the ends than it does in the middle. The Indians explain the term thus. This stick is always banded about the middle of its lateral surface. Across the end at which the hole does not open there usually run three parallel straight lines. Mr Dozier gives as the Spanish name of this stick "*cinchado*, girtled",¹ and Dr Martin gives as the Spanish designation of the stick current among the Taos Indians "*cinchow* (colloquial for *cinchado*), girthed".² Although Spanish *cinchado* 'girthed', past participle, masculine and neuter gender, of *cinchar*, 'to girth', in Tewa pronunciation *sɪtʃaʊ*, seems a more natural designation for this stick than *hinchado*, swollen, the San Ildefonso Indians agree that *tɪ'ɪŋ*, *hinchado*, is the only name current at their village. The form *hinchado* may at some time in the past have become applied, by a misunderstanding, instead of *cinchado*; and of *hinchado* the Tewa name *tɪ'ɪŋ* may be merely a translation. It seems less probable that *tɪ'ɪŋ* is the ancient Tewa name of which *hinchado* is a translation.

4. *Mulàsɛ'ɲndɛ(p'ɛ)* or *mutasɛ'ɲndɛ(p'ɛ)*, 'old mule (stick)' (*mulà* or *mutà*, she-mule < Spanish *mula*; *sɛ'ndɛ*, old man, age-sex noun; *p'ɛ*, stick). This stick is called in Spanish "*el mulato*", 'the tawny', 'the mulatto', in Tewa pronunciation *mu'atà*, much as we might call it "the mulatto" or "the nigger" in English, because the entire lateral surface is dark or tawny with decoration. Spanish *mulato*, *mulata*, are derivative forms of *mulo*, *mula*, Latin *mulus*, *mula*, meaning male and female mule respectively. A mulatto (< Spanish *mulato*) was so called in Spanish because like a mule he is the offspring of very unlike parents. The Tewa Indian, not being acquainted with that variety of human being called mulatto, very naturally understood the word in its more original signification as applied to a mule, and rendered it in his

¹ Stewart Cullin, op. cit., p. 369. Girtled or girthed?

² Ibid., p. 370.

language as *mulāsɛ'ndc*, to translate the derogatory sense expressed in Spanish by the ending, *-ato, -ata*, just as we might add "old" in English. Now *mulato*, as the name of a cañute stick, is in Spanish masculine and neuter, like the names of the other sticks and like the word *cañute* itself. But in Tewa while the form *mulā* or *mulā* is applied to a female mule as in Spanish, its masculine counterpart, *mulo*, does not exist, Spanish *macho*, in Tewa pronunciation *matfū*, having been adopted for the male mule. So when the Tewa Indian heard *mulato*, the first part of the word sounded to him feminine, the second part masculine, and he gave this peculiar hybrid idea expression in his own language when he translated the word with *mulāsɛ'ndc*. The entire lateral surface of this stick is always entirely covered with ornamentation, whence the name as explained above. Across the end at which the hole does not open there usually run four parallel straight lines. Mr Dozier gives as the name of this stick "*sēn-dō*", Spanish *viejo*, old"¹ ("*sēn-dō*" for *sɛ'ndc*), while Dr Martin gives as the Spanish name for the stick current at Taos "*mulata*, tawny",¹ writing incorrectly the feminine form "*mulata*" as he does "*una*" instead of "*el uno*" for the "one" stick.

The *tš'jŋ* stick is never called *pejē'jŋ*, 'the "three" stick', nor is the *mulāsɛ'ndc* stick ever called *jenūjŋ*, the "four" stick, although the lines across the ends might seem a reason for such a naming.

Although the disposition of the decoration of the sticks has been the same in the case of every set observed at San Ildefonso, there is considerable variation in the details of pattern. The commonest pattern consists of diagonal equidistant parallel lines as on a twisted stick of striped candy (see fig. 21). A checkered pattern composed of two intersecting series of such lines is also common. An upright checkerboard pattern also occurs; so also more complicated systems of linings and dottings. Dots or x's, the latter representing the footprints of the roadrunner, may occur sprinkled over any of the patterns. All the sticks of a set may not

¹ Stewart Culin, op. cit., p. 370.

in every case rigidly adhere to the same decorative pattern. The $t\dot{i}'j\eta$ stick may bear an x at its end instead of the three parallel bars. The $mul\dot{a}se\eta ndc$ stick occasionally has at its end a figure consisting of two parallel lines intersecting two other parallel lines at right angles (the "sharp" of our musical notation), or a figure consisting of three straight lines intersecting at the central point. The simple ornamentation shown in fig. 21 seems to be commonest.

Mr Dozier states¹ that the stick known in Spanish as *cinchado* (see under $t\dot{i}'j\eta[p'e]$ above) is called in Tewa "*pin-do-ě*" or "*pin-do-tsi-ki*". It is not called thus at San Ildefonso, at least. *Pindū* is the Tewa pronunciation of New Mexican Spanish *pinto*, 'spotted'. At Jemez the stick corresponding to the San Ildefonso $mul\dot{a}se\eta ndc$ stick is dotted all over and may be called in New Mexican Spanish *pinto*. See below. But the San Ildefonso Tewa never dot any of the sticks all over and never call any of them *pinto* or *pindū*. "*Pin-do-ě*" could not be understood by the writer's informants; the last syllable appears to be the diminutive element, but this is not post-joined to adjectives. $P'e\ tsiki'j\eta$ would mean 'a stick notched around or made slender at some one portion of it,' the conception being exactly the opposite of $p'e\ t\dot{i}'j\eta$, 'a stick with some one portion of it bigger or bulging'. The writer's informants stated that although a Tewa not familiar with the terminology of the game might call the girthed stick $tsiki'j\eta$ (for which Mr Dozier's "*tsi-ki*" is clearly meant), it is not customarily applied to this stick.

The markings and names of the sticks do not signify different values. In fact, they have nothing to do with the playing of the game. They are merely designations convenient in referring to separate sticks. Thus one will hear during the course of a game such expressions as these: "You will find it in the old mule now certainly"—"No, this time I am going straight for the 'one' stick."

The little stick that is hidden is only an inch or two in length. To distinguish it from the other sticks, which, as stated above, are known as $p'e$, this is called $p'e'e'$, 'little stick', 'e' being the diminutive-forming element in Tewa. This small stick will in this paper

¹ Stewart Culin, *op. cit.*, p. 369.

be spoken of as the "pin", for want of better terminology. The pin may be of wood, bone, or metal; most frequently it is an iron nail. It must be sufficiently heavy to fall out of the holes in the sticks readily and of such size as not to become stuck in the oftentimes rough-surfaced and crooked cavities. The writer has never seen the pin ornamented in any way. Mr Dozier describes a pin from Santa Clara as being painted with bands of several different colors.¹

The sticks are not always the property of those playing. They usually belong to the person or persons who made them. Some very ancient sets can be obtained at the village. The set shown in fig. 21 is very old. The sticks may be kept almost anywhere in an Indian's house.

HOW THE GAME IS PLAYED

Katc'εp'ε'ε' is played by males only. The game is played for the most part in winter, when the Indians have little else to do, although they have no objections to playing it in the summer time. At the Tewa pueblo of San Juan it is invariably played on All Saints' eve (the eve of the first of November), when it forms the chief amusement and means of celebration. This year it was played only once at San Ildefonso previous to Christmas. It is played most in January, February, and March. At present it is more likely to be played on Saturday nights or Sundays than at other times.

The game is frequently played continuously for hours. In ancient times, it is said, the gaming often lasted an evening and a day. It is usually played outside the house, frequently on the porch with which, due to Mexican influence, the Indian house is regularly provided; but sometimes inside, especially in cold weather. It is played in the day time, or at night. As far as the writer can judge, Mr Dozier is wrong when he says: "*Cañute . . . is played usually at night within doors.*"²

Immediately before commencing the game two piles of loose (usually dry) sand or dirt are formed, one as the center for each party of contesting players. These piles are called *nā' qmhc'āł*,

¹ Stewart Culin, *op. cit.*, p. 368.

² *Ibid.*, p. 369. The italics are the present writer's.

rounded dirt (*nġ'η*, earth; *mbc'ġ*, rounded). They may vary in height from six inches to over two feet: they become much flattened before the end of the game. The size of the piles usually varies directly as the size of the sticks. When in the open, these piles are twenty-five to a hundred or more feet apart. When on the porch or indoors they are as far apart as space permits.

As counters for keeping account of the winnings made in the course of a game, kernels of corn (*k'p'ηk'ε*), beans (*tu*), or other seeds (*ġġ*) may be used. There is no general word for 'counters'. The number of counters is frequently fifty, one hundred, one hundred and four, one hundred and fifty, or two hundred. The greater the number of counters, the longer the game is supposed to be likely to last. A small number of counters is used if it is desired that the game be short. The counters, whatever number may be decided upon, are deposited before the game begins in a common pool called "*el troje*" in Spanish, '*ε nduhē* in Tewa pronunciation, meaning the 'granary' or 'mow'. The Tewa in their own language speak of it as *k'p'ηk'ε mbc'ġ*, 'pile of corn kernels', etc., as the case may be. Sometimes the counters are merely laid on the ground or on some object present by chance. Or they may be placed in a cup, spoon, or other vessel of Indian or white man's make (see fig. 21).

In the more important games two men act as "cashiers" (*nda'ġnġġi'ġ*, 'they two watch or guard') for their respective sides, paying the forfeits incurred by their respective sides out of the common pool under the closest scrutiny of all concerned. Two additional receptacles may be employed to hold the counters earned in the process of the game by the opposing sides, but the accumulations of counters are commonly placed on the ground or on some object that chance presents.

There are invariably two sides or parties. There may be only one player on each side or there may be as many as ten or more.

The game is regularly accompanied by betting, and Mexican players have the reputation of being heavier betters than the Indians. The stakes are usually made when the piles of dirt, sticks, and counters have been made ready, but before the game

actually begins. One side bets perhaps fifty cents; the opposing side, an old pocketknife. As much as five dollars is occasionally staked by each side. In earlier times betting values were largely computed with deerskin as the standard. The stakes are placed in the keeping of some person agreed upon by both sides, usually one of the onlookers, and are given to the players of the winning side at the close of the game.

To determine the deal in opening the game both sides retire to



FIG. 22.—Determining the deal—Picking up the first stick.

their respective dirt-piles. A disinterested person builds a small pile of dirt between the two other piles and sticks into it two of the game-sticks, so arranged that the closed ends of the sticks project from the pile, the pin having previously been secreted in one of the two sticks. One of the two sides then comes over and guesses in which of the two sticks the pin is situated. See fig. 22, which shows a player in the act of picking up one of the two sticks, thus determining the deal. If the first stick guessed contains the pin, the guesser's side has the deal. The sticks are taken to the vicinity

of the dirt-pile of the guesser's side, where one of the players secretly inserts the pin in one of the sticks and then places all four of them on the pile so as to form one of the figures described below. If, however, the first guess were wrong the other side would have the first deal. There are no leaders. One, or several, players now come over from the opposing side, while the side possessing the sticks perhaps sings the taunting song given below or tries in some other way to disconcert the guessers so that they will be defeated in their object. The guesser lifts up the sticks one after another, endeavoring to select as his third choice the stick that contains the pin. The object is to find the pin in the third stick guessed. If the guesser does not find it in the third stick guessed, he loses and has to pay a forfeit to the side possessing the sticks. If the guesser finds the pin in the first stick guessed, his side has to pay the opposing side ten counters out of the common pool. If he finds it in the second stick guessed, his side must forfeit six counters. If he finds the pin in the fourth stick guessed, his side must forfeit four counters. But if he finds the pin in the third stick guessed, the sticks become the property of his side and he returns to his own side with the sticks, which remain with his side until they are won from them by the opposing side, which now is the guessing side. Thus the dealing side wins all the time unless the guessers find the pin at their third guess.

The forfeits of counters are paid out of the pool until that is exhausted. If there be after a certain unsuccessful guess fewer counters remaining in the common pool than ought to be paid, only the number of counters remaining in the pool is paid. But in the case of all successive unsuccessful guesses, the forfeits are directly paid out of the pool of the losing side. At last one side or the other gains all of the counters, thus winning the game.

When there are two or more partners on either or both sides, these usually assist each other mutually in arranging the sticks and guessing. Individuals on the same side do not systematically take turns as we should expect.

One must remain by the pile of his own side while the pin is being inserted by parties of the opposing side. This rule is strictly enforced.

The players of the side successfully guessing, having obtained and for some time retained the sticks, are thought to have power (*pinqn*). According to the conception of the Indians, the sticks pass from one side to the other according to the power to divine the pin in the third stick chosen. It is stated that certain men are born guessers. Such men are said to be successful every time. The good guesser does not hesitate long. "His heart tells him which stick it (i. e., the pin) is in."

The good guesser, however, himself admits that he can sometimes tell in which stick the pin lies by watching the eyes and actions of the person who hid the pin, for the person who hid the pin, usually, but not always, knows which stick the peg is in. Sometimes the placer knows but forgets. The guesser may ask the placer if the pin is in this or that stick, looking him in the face. In order to avoid such eye reading or mind reading, if you will, the person who placed the pin is taken by the hand by another person of his own side and is led away and made to stand with his back to the players, lest he unwittingly betray the location of the pin.

As the game is played at San Ildefonso at present the man placing the pin usually stands so that all the players are in front of him, holds all four of the sticks and the pin behind his back, using both hands, places the pin in one of them, and then shuffles the sticks, not looking at them all the while. Rarely the placer turns his back to the players and secretly and knowingly inserts the pin. Men who do thus are likely to be untrustworthy; to read the eyes of some bad men is misleading. In olden days when the wearing of blankets was commoner than now the placer sometimes covered himself up in a blanket and while thus concealed inserted the peg and shuffled the sticks. While the sticks are being placed, it must be remembered, the men on the side of the placer are usually singing the song to disconcert the side of the guesser. Very rarely the pin is inserted in plain view of all on the placer's side. But the "best way" is to hold all four sticks with holes upward in one hand behind the back. The peg is then held over them and dropped or thrown in with the other hand. Yet even when such care is taken, one often discovers the whereabouts of the peg when arranging the sticks on the dirt-pile.

There is much that savors of true divination in connection with locating the peg.

1. It is a common practice that two good guessers march forward. One hastens toward the pile, saying "It is not in this stick." He moves the stick from its place with his hand or foot. True, the peg is not contained in it. "And it is not in this one either," says the second good guesser. It is not there. The first good guesser now has a chance to test his skill. He has to determine in which of the two remaining sticks the pin is to be found. After only a moment's



FIG. 23.—Determining by divination which stick contains the pin.

deliberation he tosses one of them aside, saying "It is not in this either," and disdaining to examine the one in which the stick is to be found he gathers them up, pin and all, and returns triumphant to his own side.

2. It frequently happens that the guesser comes and takes up one of the sticks. If this does not contain the pin, he grasps it in his hand and with it gives another of the sticks a sharp knock. This is a sign that he believes the second stick does not contain the pin. If the pin still has not been found, he uses this or the first

stick in rapping a third stick—a sign that he believes that the stick which he thus raps does not contain the pin.

This sharp striking of the sticks is said to show ability to find the pin quickly. The guesser speaks to the sticks—calls them his sticks.

3. The feat of divination next to be described is said never to fail "if one knows how." The guesser approaches the pile and seizes one stick, and in finding it not to contain the pin, uses it in rapping a second stick, as was described above. Two sticks



FIG. 24.—Tapping the stick which, according to the divination, does not contain the pin.

remain. Taking one of the lifted sticks he sets it on its end near enough to the remaining undisturbed sticks that its top can fall and hit one or the other of them (see fig. 23). The stick thus divined is supposed to contain the pin. The other stick is first sharply struck by a stick grasped in the hand, just as the second stick lifted was struck (see fig. 24), then raised, and laid aside. By such process of divination and elimination the right stick is said always to be guessable in the right order.

The divination by letting one of the sticks fall is accordingly

practised before the third guess, which is considered the most important one. Some players regularly follow this practice. On one occasion, when the divining stick fell on the wrong one of the two sticks, the Indian was heard to exclaim impatiently to the divining stick, "You lied!"

If in divining a stick falls away from the pile so as to indicate nothing, the guesser picks it up and tries again.

4. The guesser may come and pick up one stick and with it quickly tap any two others. The order in which he taps is not important if he holds his other hand in a definite position while he taps them. That one of the two sticks tapped which lies nearest his other hand counts as second, and the other one as third.

5. The guesser may approach and tap one of the sticks with his finger or fingers. This is a sign that this one will be his third choice. He then proceeds carefully to eliminate the others, the one which he tapped first being the third stick lifted.

The idea behind the action of striking the sticks sharply is that it makes them obey the guesser and shows that the guesser is smart.

The song of *jmu'eta*, the Western mocking bird (*Mimus polyglottos leucopterus* Vigors), while one is guessing, is supposed to assist the divination in some way. This fact is from the writer's direct observation, and its naïveté startled him.

It seems to be the conception of the Indians that the sticks pass from side to side according to the power of the guessers to divine the pin in the third stick chosen.

When several play on each side, one or two individuals do most of the guessing. Perhaps a single individual will guess for his side as long as he has good luck. Then if he has no success for a time others will come forward and try their luck for the good of the side.

Only rarely is much hesitation apparent on the part of the guessers or are lengthy discussions indulged in.

The dealing side tries to confuse and thwart the guessers as much as possible. Notice was made above of the precautions taken to avoid eye-action or mind reading. The guesser is constantly addressed with such words as: "You are going to pay us ten," "'A, 'a, he is going straight for the wrong one," "He will not find it in that one though."

The sticks are sometimes manipulated more or less with the feet instead of the hands.

SINGING

The players on the side which has the sticks frequently sing a song while the guessing is going on, "they are so happy in the possession of the sticks." The guessers never sing: "they are sorry because they are guessing." But the chief purpose of the singing is to confuse the guessers. Although various songs may be sung while the game is in progress, there is only one real *cañute* song, known in Tewa as *kac'ε'p'ek'a'wc* (*kac*, to hide + *ε'*, game; *p'ε*, stick; *k'a'wc*, song) or *kgñyutēk'a'wc* (*kgñyutē* < Sp. *cañute*; *k'a'wc*, song), and in Spanish as *la canción de cañute*. A tambourine drum is sometimes used to accompany the song. The large cottonwood dance-drum is never thus used.

The *cañute* song was completely recorded by means of a phonograph and the record was transcribed into musical notation by Miss Frances Densmore.

The song has been analyzed by Miss Densmore as follows:

"Two renditions of this song were recorded by Mr Harrington, the transcription being made from the first rendition. In beginning the second, after a pause, the singer apparently had difficulty in finding the proper pitch for the song. The second rendition opens with the same rhythm and general trend of melody but with a pitch which is vague and wandering. This continues as far as the measure marked X, which is found to be accurate in intervals and on the same pitch as the corresponding measure in the first rendition. Beyond this measure the correct pitch is maintained throughout the song. There is a slight difference of rhythm in the rapidly enunciated words of the middle portion, and the last four measures are omitted in the second rendition.

"On examining the transcription we note that the melody tones, exclusive of the embellishments, are those of the scale which is commonly known as the minor pentatonic scale but which is called the second five-toned scale by Helmholtz in his work entitled *The Sensations of Tone as the Physiological Basis of Music* (part 3, chapter 14).

"In rhythmic outline the song is divided into four periods, the first containing six measures and the last three containing nine measures each. The first and third periods are double, and each period has a distinct rhythmic phrase; and the second and fourth periods contain a different rhythmic phrase which is short and continuously repeated. The measure lengths are clearly indicated by accented tones, and the metric unit is steadily maintained except in a few measures. The short tones of the embellishments are somewhat uncertain in pitch, but the intonation of the principal tones approaches accuracy. This is of special interest in the transition from the second to the third periods of the song, the ascending interval of an octave being correctly sung in both renditions.

"In this, as in all transcriptions of primitive songs, the musical characters should not be regarded as absolute representations of the tones produced by the native singer. It is found that in certain respects, notably the intervals of the octave and fifth and the regularity of the metric unit, the native performance parallels our standard with a reasonable degree of accuracy; no attempt is made to indicate deviations from this, as observation has shown that such deviations frequently vary with the mood of the singer.

"It is assumed that the speed of the recording phonograph was 160 revolutions to the minute, and the indicated tempo of the song was determined by playing the record on a phonograph adjusted to that speed."

Thanks are also due to Mrs I. H. Rapp, of Santa Fé, who patiently and successfully endeavored to record the song directly as sung by an Indian.

The words of the song have no known meaning with the exception of the following:

' <i>ŋ</i> ŋ <i>é</i> ' <i>itc</i>	<i>kə</i> ŋ <i>ɥ</i> <i>te</i> ' <i>û</i>	<i>hc</i> ' <i>ɛ</i> ŋ <i>â</i> ' <i>û</i>
yonder	the cañute player (i. e., the guesser)	now he is coming
' <i>ŋ</i> ŋ <i>é</i> ' <i>itc</i>	<i>kə</i> ŋ <i>ɥ</i> <i>te</i> ' <i>û</i>	<i>hc</i> ' <i>ɛ</i> ŋ <i>â</i> ' <i>û</i>
yonder	the cañute player (i. e., the guesser)	now he is coming
<i>hâ</i> ŋ <i>u</i> ŋ <i>â</i> <i>m</i> <i>b</i> <i>c</i> ' <i>ɛ</i>	<i>hc</i> ' <i>ɛ</i> ŋ <i>â</i> ' <i>û</i>	<i>fa</i> ' <i>p</i> <i>i</i>
nothing		now he will find



'ε - ni - ja - na 'ε - ni - ja - ni - jc 'ε -



ni - ja - na 'ε - ni - ja - ni - jc 'ε - ni - ja - na



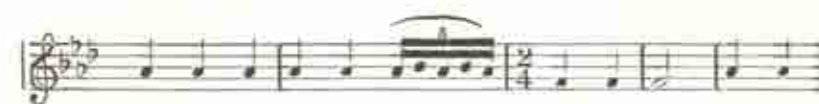
'ε - ni - ja - na ni - ja - ha 'ε - ni - ja - ni - jc 'ε -



ni - ja - na 'ε - ni - ja - ha 'ε - ni - ja - ni - jc 'ε η -



gi - 'i - lc ka - ni - le - su hc'ε - na 'ā 'ε η -



gi - 'i - lc ka - ni - le - su hc'ε - na 'ā hāη - wā -



mbc'ε hc'ε - wi' - fa - pi 'i - ja - ha 'ε - ni - ja - ni -



jc 'ε - ni - ja - na 'ε - ni - ja - ha 'ε - ni - ja - ni - jc.

The occurrence in the song of the Spanish word *cañutero* need cause no surprise. Spanish words and phrases occur in some of the most sacred traditional formulas pronounced by the Tewa in their secret meetings. In fact, the Tewa words translated above are frequently supplanted by the following Spanish words, melody and burden remaining the same.

alla viene el cañutero o—o

there comes the cañute player

(i. e., the guesser)

el no halla el palito o—o

he not will find the pin

el perdió el juego

he lost the game

CHEATING

The dealers may resort to more strenuous means of thwarting the guessers than by merely taking precautions, talking, or singing. A frequently occurring trick is to insert two pins, each in a different stick. The guesser is then doubly likely to find a pin in the first or second stick guessed, and the dealers arrange secretly to extract the other pin as they lift the remaining sticks from the pile. The eliminating manner of procedure in picking up the sticks described above may originally have been due to an attempt to prevent cheating.

THE ARRANGEMENT OF THE STICKS

The figures made by the dealers by variously arranging the sticks on the dirt-pile are the most interesting feature of *cañute* as it is played by the Tewa. They are merely an artistic embellishment of the game. These figures are here reported and described for the first time.

It is not certain whether they are a feature of the game as it is played at other pueblos. The only reference to *cañute* figures which the writer can find is made by Mrs Stevenson, who says in describing the Zuñi form of the game:

"The elder God of War always placed his cups in the form of a square;"¹ and again: "He forms three points of a triangle with

¹ Stewart Culin, *op. cit.*, p. 381.

three cups and places the extra cup to the eastern point, 'for so the younger God of War placed his game.'"¹ This indicates that at least the principle of forming the figures is known at Zuñi. However, the Jemez, Taos, and Isleta seem not to be acquainted with the figures, and it is probable that the development of cañute figure-making at San Ildefonso is anomalous.

The figures are made much in the same fashion as children graphically represent certain ideas by arranging small objects. But the forms have become traditional and the signification of



FIG. 25.—The first guess.

each is very definitely understood by the villagers. The San Ildefonso cañute figures present a symbolism so highly conventionalized and so complex that the term language might well be applied—a symbolism not essentially different in origin or practice from human speech, gesture language, African drum language, conventionalized graphic designs that have a commonly understood meaning, or writing whether executed in pictograms, ideograms, phonograms, or phonetic symbols.

The characteristic form of most of the figures is closely paralleled by designs occurring in the graphic art of the Tewa.

Fifty-nine of these figures were explained to the writer. Only a small fraction of this number are usually made in a single game. The same figure is often arranged many times in succession, even though the sides may change.

There is no definite order in which the figures are made except that certain figures are likely to suggest certain others. Thus the penis design is usually followed by that of the vagina, which is in turn followed by the big penis and horse penis. The penis and vagina figures are usually made in derision after the guessers have failed several times.



FIG. 26.—"Here the guessing man comes."

The grouping of figures presented below was made by the writer, and is not an Indian classification, as there is none. In this grouping the fifty-nine figures are classed under seven heads according to the objects they represent: Figures representing celestial objects, 13; figures representing animals of the air and their parts, 7; figures representing geographical features, 7; figures representing the

¹ Stewart Culin, *op. cit.*, p. 382.

human form, its parts or effigy, 11; figures representing houses or their parts, 7; figures representing weapons or their parts, 7; figures representing religious objects, 7.

The principles underlying the structure of the figures would be worthy of close study. The technique of the figures is also interesting, the player being limited to the use of four straight sticks of uniform length.

As is true of most primitive symbolism, variability of form is permissible, but only within certain limits. Thus the figure representing the tablita headdress may be constructed in any one of three quite distinct forms, each of which may present minor variations. But the Chifoneti horn design, if varied ever so little in a certain way, becomes identical with one form of the cloud design. The players invariably take care to keep these two designs distinct. Again, figures representing widely different objects may be almost or quite identical. Thus the figure representing the flight of sand-hill cranes (pl. XI, fig. 3) is the same as that representing hills (pl. XII, fig. 1). A study of the written forms of the letters of our alphabet reveals similar conditions.

In the instance of some of the figures only the maker knows with certainty what he represents, and inasmuch as the names of the figures are usually not spoken, it is quite conceivable that a man might make a figure understanding that it represents the flight of sand-hill cranes, while another person present might interpret it as meaning mountains.

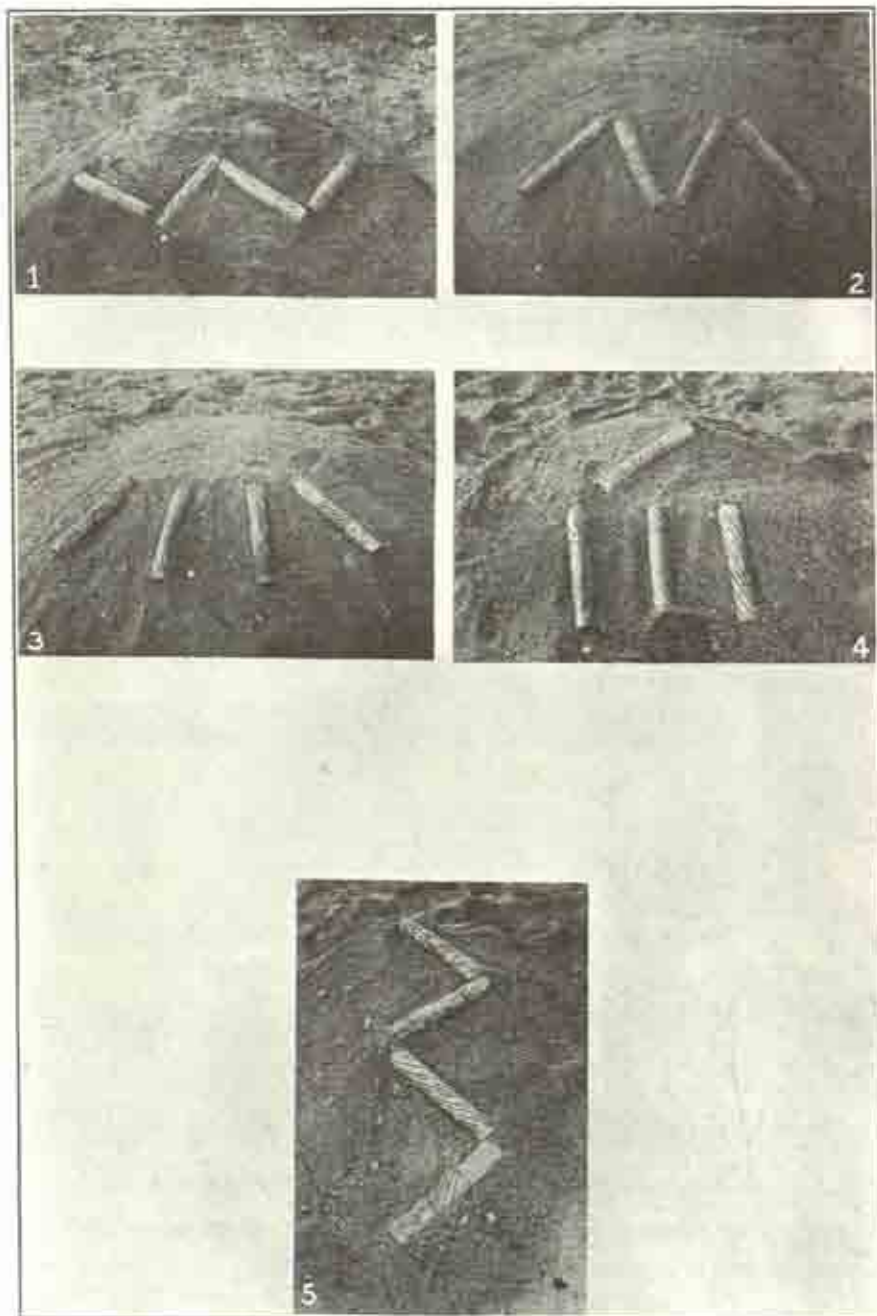
As regards the plane of the figures, a stick may lie on the pile, lie on the pile with one end buried in it, lie with one end on the pile and with the other end on another of the sticks, or stand on end planted in the pile. In the majority of the figures all the sticks lie more or less horizontally. In one figure only (pl. XIII, fig. 5) do sticks, representing beard hairs, lie on the pile with one end buried in it, and in one figure only (pl. XVI, fig. 1) does a stick, representing an arrow, lie on the pile with one end resting on another stick. When all the sticks stand erect either people or constellations are represented. Only three figures (pl. XI, fig. 6; pl. XII, fig. 7; pl. XIII, fig. 2) have combinations of lying and standing sticks.

The principles by which some figures are distinguished from others are interesting. Thus the sole difference between the two figures in each of the following pairs is that in one the sticks forming certain portions of the figure are contiguous; in the other, separated.



CHART ILLUSTRATING CONTIGUITY AND SEPARATION IN CANUTE GAME

The openings of the sticks are always covered with dirt. In the squarish, horizontally placed figures the openings of the sticks are always oriented toward the center of the figure. In other



FIGURES REPRESENTING CELESTIAL OBJECTS

1, 2, *'ck'uwà*, cloud. 3, 4, *kwa'*, rain. 5, *tsigutwānu*, lightning.

horizontally placed figures the openings of the sticks are always oriented in a direction opposite to that from which the guessers come. The vertically placed sticks always have their openings turned downward, and care is taken in placing them and in picking them up lest in doing so the pin drop out. Fig. 22 shows an Indian picking up a stick that is in a standing position.

The figures are commonly oriented as shown in the photographs, although almost any of them might be oriented in any other direction. Where two orientations are common these have in some cases been illustrated.

The penises and the weapons regularly point toward the guesser's side, while the sand crane and bird are regularly represented as flying away from the guesser's side.

Some figures are more realistic than others. Thus the road-runner's footprint and the turkey's foot are very realistic.

There are many arrangements of the sticks possible that have no significance. If such an arrangement is made, the Indian will say: *wiñtupi*, 'it says nothing' (*wi*, negative; *nā*, it; *tu*, to say; *pi*, negative). However, there are certain geometric terms in the language that might be used in describing such unfamiliar arrangements. Geometrical descriptive terms can be applied to any one of the figures in addition to its proper name.

The figures were photographed as actually made by the Indian players. At first drawings of the figures were attempted, but they were found to give at best an inadequate idea of the figures.

DETAILED DESCRIPTION OF THE FIGURES

I. FIGURES REPRESENTING CELESTIAL OBJECTS

Pl. IX, fig. 1. Tewa '*ck'uud*, 'cloud'. The w-shaped arrangement reminds one of such a cloud design as is shown in the chart of designs, fig. 1 (p. 281). This figure is often not distinguishable from *k'c'sāstē*, 'Chifoneti horns' (pl. XVII, fig. 1), except in the mind of the maker. When the Chifoneti horns figure is carefully made it is arranged as shown in pl. XVII, figs. 1 and 2. The figure representing *tsiguwānu*, 'lightning' (pl. IX, fig. 5), usually differs from this figure

in orientation and in having its sticks form greater angles with each other.

Pl. IX, fig. 2. Tewa 'ck'uwā, 'cloud'. This differs from the preceding figure only in its orientation. It differs from the usual form of *tsiguwānu*, 'lightning', as does the preceding figure. It is likely to be confused with *pugaŋu*, 'flight of sand-hill cranes' (pl. XI, fig. 3), and with 'cku, 'hills' (pl. XII, fig. 1).

Still another form of the cloud figure is identical with the form of *pugaŋu*, 'flight of sand-hill cranes', given in pl. XI, fig. 1. This resembles the cloud form shown in the chart, fig. 2.

Pl. IX, fig. 3. Tewa *kwā*, 'rain'. This represents the drops descending. Compare the chart, fig. 3. This variety of *kwā*, 'rain', may be confused with *leqwap'e*, 'house rafters' (pl. XV, fig. 2), or with *i'cwāejckwc*, 'the people are lying asleep' (pl. XIII, fig. 4).

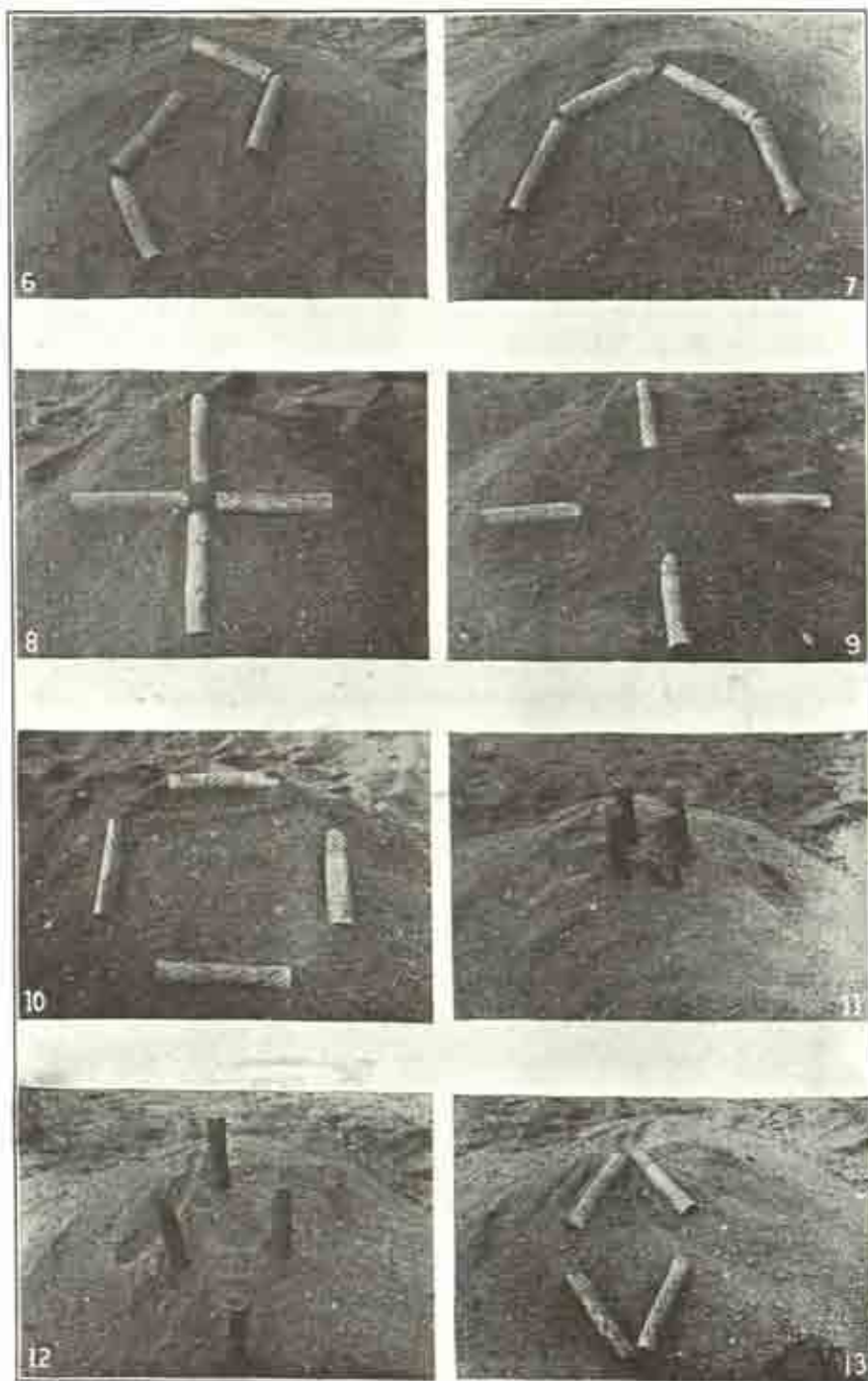
Pl. IX, fig. 4. Tewa *kwā*, 'rain'. The design shown in the chart, fig. 4, makes it probable that the stick lying at an angle with the other represents the cloud from which the rain descends. This stick is always placed diagonally lest the figure be confused with *scbc*, 'growth of hair on the face' (pl. XIII, fig. 5). This figure is identical with one form of the 'che, 'tablita headdress', design (pl. XVII, fig. 5).

Pl. IX, fig. 5. Tewa *tsiguwānu*, 'lightning'. This evidently represents a zigzag lightning bolt; compare fig. 5 of the chart, which is copied from a lightning bolt issuing from the mouth of a bear in a pottery painting. This figure is rarely made so carelessly that it would be confused with the cloud figures (pl. IX, figs. 1 and 2), *pugaŋu*, 'flight of sand-hill cranes' (pl. XI, fig. 3), 'cku, 'hills' (pl. XII, fig. 1), or with *kabajānde*, 'horse penis', also called *qwi'i*, 'in a line' (pl. XIV, fig. 11). The figure is usually oriented so that it "shoots toward the guesser."

Pl. X, fig. 6. Tewa *tsiguwānu*, 'lightning'. This represents two lightning flashes. It is not confusable with any other figure.

Pl. X, fig. 7. Tewa *kwā te mbe*, 'rainbow' (*kwā*, rain; *te mbe*, wheel). Compare the pottery painting reproduced in the chart, fig. 6.

Pl. X, fig. 8. Tewa 'agejc, 'star'. This is often confused with



FIGURES REPRESENTING CELESTIAL OBJECTS—CONTINUED

6, *tsigutwānu*, lightning. 7, *kwā'te'mbe*, rainbow. 8, 9, *'agejc*, star.
 10, *'agejcsc'jc*, morning star. 11, *k'p'η'ambe*, 'meal-jar constellation.'
 12, 13, *k'u'qwi'isipu*, 'belly-of-sling constellation.'

'*egcwi*' \dot{g} ' η , 'roadrunner's foot', although the latter should properly be viewed as a reader views an *x*. Mrs Stevenson speaks of "a cross signifying the four regions" among the Zuñi.¹ The figure is identical with the pottery painting of the chart, fig. 7. Mrs Stevenson informs the writer that in Zuñi pictographs a cross is said to signify the Morning Star. It is reported that among the Navaho "so", 'star', is represented by a St Andrews cross.²

Pl. x, fig. 9. Tewa '*agejc*', 'star'. This differs from the preceding figure in that the sticks do not touch each other. No such star design as this is known to occur in San Ildefonso pottery design.

Pl. x, fig. 10. Tewa '*agejcsc*' \dot{g} ' η , 'the morning star' ('*agejc*', star; *sc*' \dot{g} ' η , large). This differs from *teqwa*, 'house' (pl. xv, fig. 1) in that the sticks are not contiguous. The figure reminds one of the morning star design reproduced in the chart, fig. 8. Sometimes this figure is turned so that it stands on edge, thus becoming similar in form to *tsiguwǫnu*, 'lightning' (pl. x, fig. 6), and *k'u'qwiłsipu*, 'belly of a sling' (pl. x, fig. 13, and pl. xvi, fig. 6). One informant apologized that the edges of the star are really not straight, but one can not make them curved using four sticks. Curiously enough, the Franciscan Fathers report that the Navaho also call a diamond-shaped figure either "*beđdilt*' \dot{g} ' η *nāhālin*", 'slingshot like', or "*sōtso*", 'big star'.²

Pl. x, fig. 11. Tewa *k'g'ηt'ambē*, 'meal-jar constellation' (*k'g'η*, meal, flour; *t'ambē*, large drying jar). This is the Tewa name of the constellation *Corona borealis*, popularly known in English as the Northern Crown. The stars of this constellation, brightly studded in the black sky, form the regular outline of a *t'ambē* or drying bowl such as the Tewa still employ for drying meal. Each stick, standing on end, is supposed to represent a star; but there are in reality more than four stars in the constellation. The figure resembles *t'cwā*, 'people' (pl. xiii, fig. 1), which shows people

¹ M. C. Stevenson. The Zuñi Indians, 234 Ann. Rep. B. A. E., Washington, 1904, p. 399.

² The Franciscan Fathers, *An Ethnologic Dictionary of the Navaho Language*, St. Michaels, Arizona, 1910, p. 257.

³ *Ibid.*

standing. The stars are said by the Tewa to be *t'cwâ*, 'people'. The arrangement of the figure is identical with that of the figure to be next discussed.

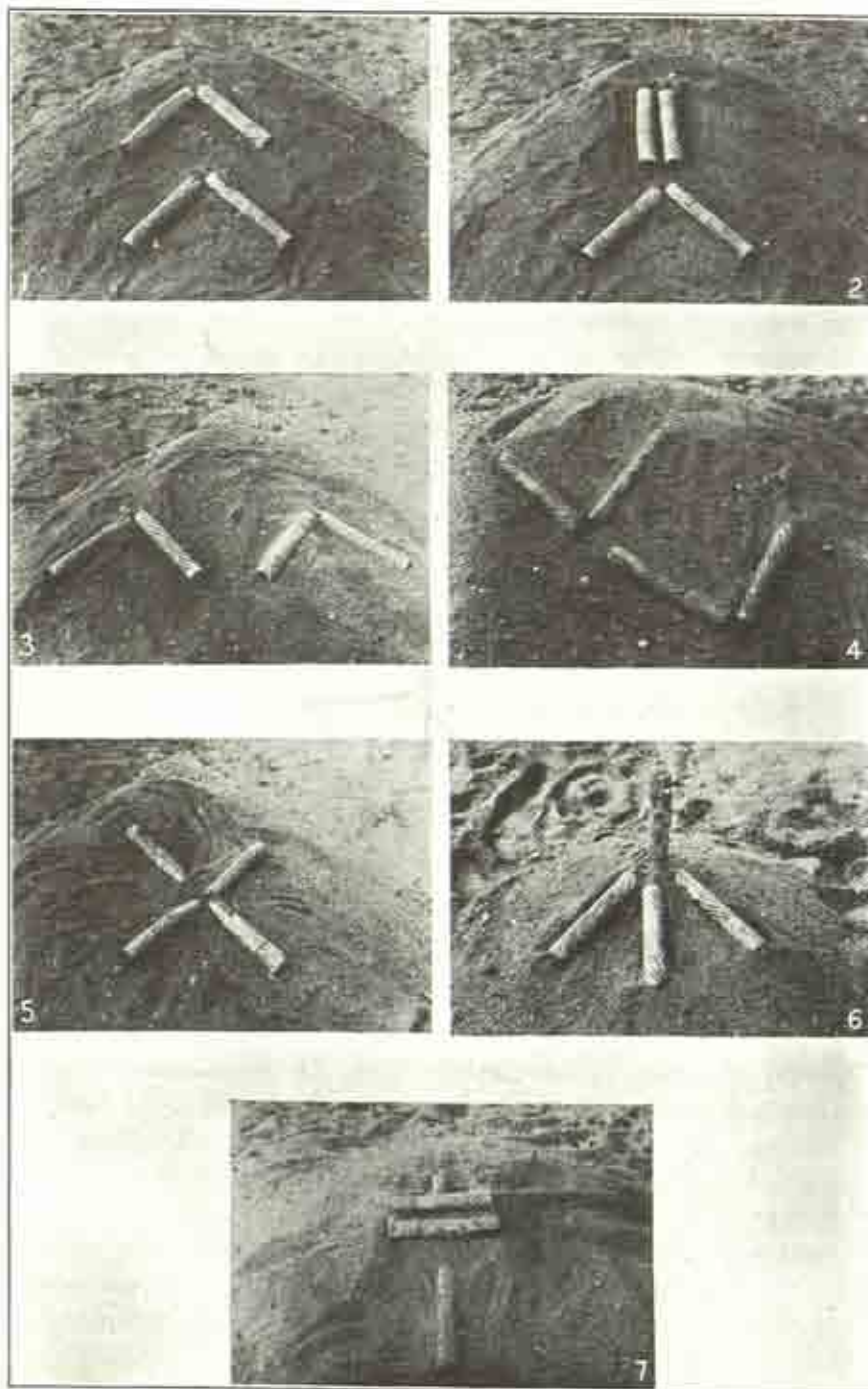
Pl. x, fig. 12. Tewa *k'u'qwiâsipu'*, 'belly-of-sling constellation' (*k'u'*, stone; *qwiâ*, to sling; *sipu'*, the hollow below a person's ribs), referring to the belly or pocket of a sling where the missile is placed. This constellation is *Dolphinus*, popularly known in English as Job's Coffin. The arrangement is identical with that of the preceding figure. This constellation or the weapon after which it is called is more frequently represented by sticks lying flat; see pl. x, fig. 13, and pl. xvi, figs. 4, 5, and 6. When the sticks are arranged erect, the constellation, and not the weapon, is represented.

Pl. x, fig. 13. Tewa *k'u'qwiâsipu'*, 'belly-of-sling constellation'. Other forms of this figure, which represents either the belly of a sling or the constellation thus named, are shown in pl. xvi, figs. 4, 5, and 6. Fig. 6 of pl. xvi is identical with *sî*, 'vagina' (pl. xiii, fig. 7). The arrangement shown in pl. x, fig. 12, represents only the constellation.

2. FIGURES PERTAINING TO ANIMALS OF THE AIR

Pl. xi, figs. 1, 2, 3, and 4. Tewa *pugafu'η*, 'flight of sand-hill cranes' (*puga*, sand-hill crane; *fu'η*, flight). These birds are seen in the spring and the fall flying in a v-shape high over head. Their loud, harsh call may sometimes be heard. Figs. 1 and 3 of this plate might also represent clouds or hills; see pls. ix and xii. Fig. 2 of this plate, on the other hand, resembles *ndê*, 'penis' (pl. xiii, fig. 6). It is indeed a variant form of the penis figure not shown in pl. xiii.

Pl. xi, fig. 5. Tewa *'egcwi'ê'η*, 'footprint of roadrunner' (*'egcwi*, *Geococcyx californicus* Lesson, roadrunner; *'ê'η*, foot, footprint). The word *'ê'η* is used indiscriminately, meaning foot or footprint. In the *Boas Anniversary Volume* Dr. Goddard notes that the Mescalero Apache render 'foot' and 'footprint' by a single word in their language. The roadrunner is called *paisano* in New Mexican Spanish, and is also known to the Americans by the name 'chaparral cock'. The footprints of this bird are x-shaped and it



FIGURES REPRESENTING ANIMALS OF THE AIR OR THEIR PARTS

1-4, *pugafu*, flight of sand-hill cranes. 5, *'egewi'*, footprint of road-runner. 6, *p'i'ndi'*, foot of wild turkey. 7, *tsi'e*, bird.

is difficult to tell from them in which direction the bird was going. It is probably for this reason, and also because there are four toes, that these footprints have come to symbolize the four directions or the universe: *t'ākipijē*, 'all directions' (*t'āki*, all; *pijē*, direction, locative postfix); *'c'pā*, 'the universe'. Fig. 9 of the chart shows this symbol as it occurs on pottery.

In the figure representing the roadrunner's footprint the sticks form right angles with each other; the *hμ'μ*, 'doll' (pl. XIII, fig. 8) is distinguished by having two acute and two obtuse angles.

Pl. XI, fig. 6. Tewa *p'ī'ηndi'ā'η*, 'foot of wild turkey' (*p'ī'η*, mountain; *ndi*, formerly 'wild turkey', now 'domestic fowl'; *ā'η*, foot, footprint). This is one of the most realistic of the figures.

Pl. XI, fig. 7. Tewa *tsi'ε*, 'bird'. This name refers to any species of bird, and the compound *p'c'tsi'ε*, 'water bird' (*p'c'*, water; *tsi'ε*, bird), even applies to some sort of insect that hovers over pools of water. The design shown in the chart, fig. 10, occurs on a piece of ancient pottery found in the Pajaritan Plateau, west of San Ildefonso, and has been supposed to represent a dragon-fly. The dragon-fly is called in Tewa *p'c'ndμ'ηndμ'η* (*p'c'*, water; *ndμ'ηndμ'η*, to whirl like a bullroarer), but the Tewa declare that this cañute figure is a bird and not a dragon-fly.

3. FIGURES REPRESENTING GEOGRAPHICAL FEATURES

Pl. XII, fig. 1. Tewa *'cku*, 'hills.' *P'ī'η* is used of mountains. This figure is identical with *puga'fμ'η*, 'flight of sand-hill cranes' (pl. XI, fig. 3), and is similar to *'ck'uwā*, 'cloud' (pl. IX, fig. 2), and to *puga'fμ'η*, 'flight of sand-hill cranes' (pl. XI, fig. 1). The chart, fig. 11, shows hills as depicted on San Ildefonso pottery.

Pl. XII, figs. 2 and 3. Tewa *p'ī'ηwi'ε*, 'mountain pass' (*p'ī'η*, mountain; *wi'ε*, pass). A wider gap in the mountains, represented by placing the two groups of sticks farther apart, is called *p'ī'ηwa'ā*, 'wide gap in the mountains' (*p'ī'η*, mountain; *wa'ā*, wide gap) (pl. XII, fig. 3). A *p'ī'ηwa'ā* as executed in pottery decoration is shown as fig. 12 of the chart.

Pl. XII, fig. 4. Tewa *k'μ'ηnabā*, 'cornfield' (*k'μ'η*, corn, *Zea mays*; *nabā*, 'cultivated field'). A pottery design representing a cornfield

is shown in fig. 13 of the chart. In it, the object shaped like an Edam cheese is said to be an ear of corn, while the horizontal line beneath it represents the field. It is the intention in both designs to show a growing corn plant.

Pl. XII, fig. 5. Tewa *kwi'c*, 'irrigating ditches'. The Tewa used to have irrigating ditches in pre-European times, they tell us. This figure differs from *p'c sc'jc*, 'great river' (pl. XII, fig. 6), in that in the latter the channel between the sticks is greater, and from *gwats'ige*, 'street' (pl. XV, fig. 3), in that the latter has the space between the two rows of sticks greater and the two sticks forming each row do not touch each other. In the chart, fig. 14, the two parallel lines are said to represent an irrigation ditch in connection with a flower.

Pl. XII, fig. 6. Tewa *p'c sc'jc*, 'great river' (*p'c*, water, river; *sc'jc*, great). This is a picture of the Rio Grande, which is usually meant when *p'c sc'jc* is used. Fig. 15 of the chart shows hills and a *p'c sc'jc* (the two parallel lines). This figure differs from *kwi'c*, 'irrigating ditch' (pl. XII, fig. 5), in having the two rows of sticks farther separated, and from *gwats'ige*, 'street', in having the two sticks forming each of these rows touching each other.

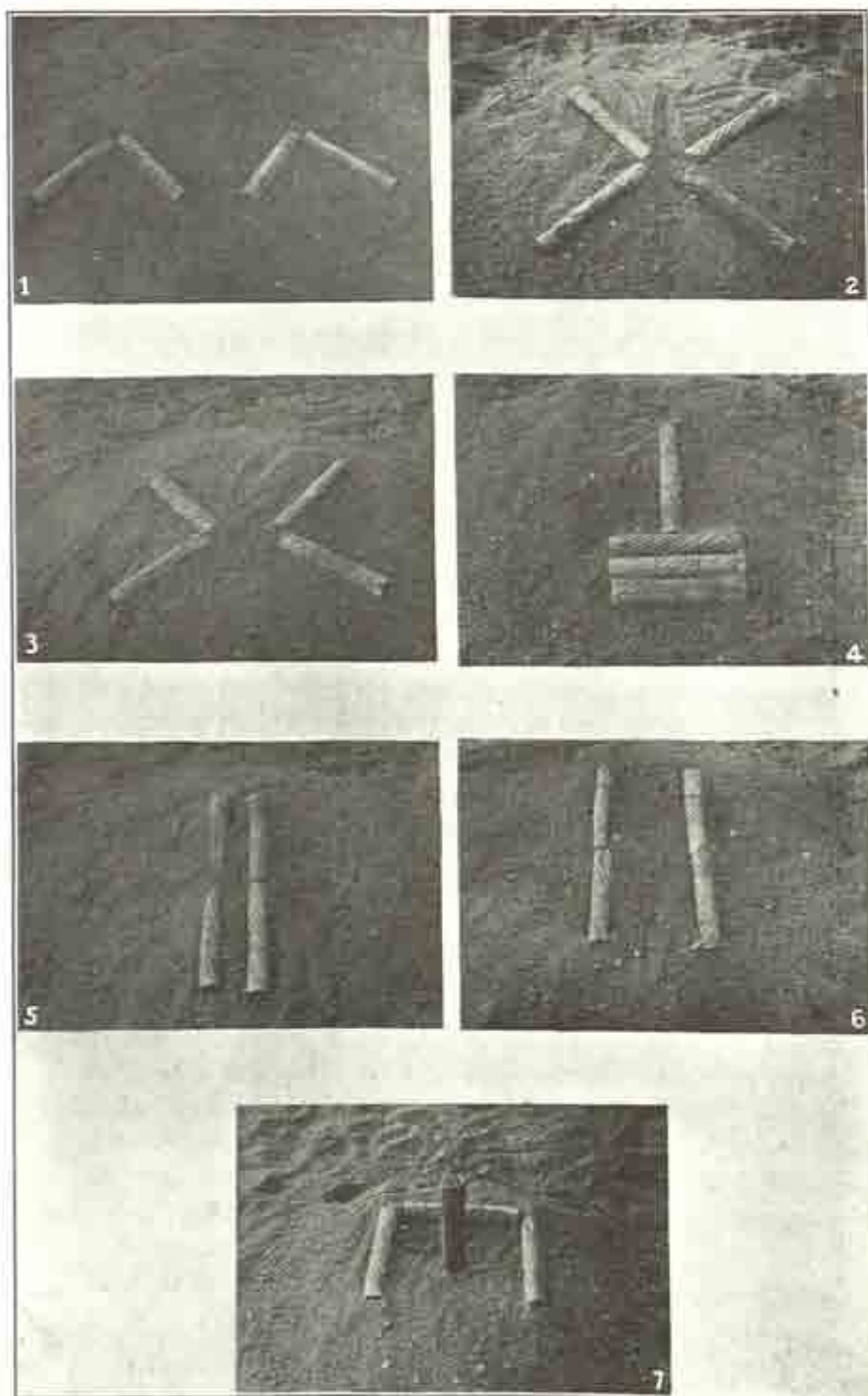
Pl. XII, fig. 7. Tewa *p'c tsa'*, 'meadow with water oozing out in places in it' (*p'c*, water; *tsa'*, to cut through, to ooze out). The stick standing erect represents the water coming up or out. Such places occur along the creeks and are called *ciénegas* in New Mexican Spanish.

4. FIGURES REPRESENTING THE HUMAN FORM, ITS PARTS OR EFFIGY

Pl. XIII, fig. 1. Tewa *i'cwà*, person, people. Of the people the informants said *ndiñwî η*, 'they are standing' (*ndi*, they 3+, animal gender; *ñwî η*, to stand). This figure is confusable with *k'ä η' ämbé*, 'meal-jar constellation' (pl. X, fig. 11), and *k'u'qwiäsipu*, 'belly of sling constellation' (pl. X, fig. 12).

Pl. XIII, fig. 2. Tewa *wî i'cwà nâhe*, 'one person is sick' (*wî*, one; *i'cwà*, person, people; *nâ*, he, she; *he*, to be sick). The other three persons are visiting the sick person.

Pl. XIII, fig. 3. Tewa *i'cwà äimä'ä*, 'the people are marching'



FIGURES REPRESENTING GEOGRAPHICAL FEATURES

1, 'eku, hills. 2, p'i'ηwi', mountain pass. 3, p'i'ηwa'a, wide gap in the mountains. 4, k'μ'ηnabā, cornfield. 5, kwi'c, irrigation ditch. 6, p'c'sc'jc', great river. 7, p'c'tsa', meadow.

(*i'cwā*, person, people; *ndi*, they 3+, animal gender; *mā'ā*, to go). Of them could also be said *ndiqwa'ālmā'ā*, 'they are marching in a line' (*ndi*, they 3+, animal gender; *qwa'ā*, a line; *mā'ā*, to go).

Pl. XIII, fig. 4. Tewa *i'cwā'ājckwc*, 'the people are lying asleep' (*i'cwā*, person, people; *nde*, they 3+, animal gender; *jc*, asleep; *kwc*, to lie, used of 3+). One informant made the obscene remark that they are men and women lying together. The figure differs from *teqwap'ā*, 'house rafters' (pl. xv, fig. 2), in that the sticks are not contiguous in the latter. It may easily be confused with *kwa'ā*, 'rain' (pl. ix, fig. 4).

Pl. XIII, fig. 5. Tewa *scbc*, 'growth of hair on the face'. It was the custom to pluck all beard hairs from the face. The word *scbc* is frequently applied as a nickname to Mexicans or to women on whose faces there is a considerable growth of hair. Sometimes the three sticks radiate, sometimes they are parallel. The stick representing the face is often almost completely covered. This figure would not be confused with *kwa'ā*, 'rain' (pl. ix, fig. 4).

Pl. XIII, fig. 6. Tewa *ndē*, 'penis'. The two sticks at the top of the picture represent the *wa'k'u*, 'testicles'. The whole figure is sometimes called *ndēwak'u*, 'penis and testicles' (*ndē*, penis; *wa'k'u*, testicles), or *ndēsc'jc*, 'big penis' (*ndē*, penis; *sc'jc*, big), or *wa'k'u'sc'jc*, 'big testicles' (*wa'k'u*, testicle; *sc'jc*, big). A variant form of this figure is identical with one form of the *puga'p'η*, 'flight of sand-hill cranes' (pl. xi, fig. 2). Three other figures representing each a penis are shown in pl. xiv.

Pl. XIII, fig. 7. Tewa *sī*, 'vagina' or 'vulva'. Sometimes it is called *sīsc'jc*, 'big vagina' (*sī*, vagina; *sc'jc*, big). This figure is identical with one form of *k'u'qwirāsi'pū*, 'belly of a sling' (pl. xvi, fig. 6), and closely resembles the other form of the same figure shown in pl. xvi, fig. 5. (See also pl. xvi, fig. 1.) The vagina is always oriented so that its greater axis points toward the guessers.

Pl. XIII, fig. 8. Tewa *hū'pū*, 'doll'. This figure is carefully distinguished from *egcwi'ā'η*, 'footprint of roadrunner' (pl. xi, fig. 5), the sticks in the latter figure forming right angles with each other.

Pl. XIV, figs. 9 and 11. Tewa *kabajūde*, 'horse penis' (*kabajū*, horse < Sp. caballo; *ndē*, penis), or *qwi'ā*, 'in a row'. In fig. 11 the

line formed by the sticks is not as straight as in fig. 9. Sometimes it is almost as crooked as in *tsiguwānu*, 'lightning' (pl. IX, fig. 5). The figures are also called *mbundūnde*, 'donkey penis' (*mbundū*, donkey, < Sp. burro; *nde*, penis). For other penis figures see pl. XIII, fig. 6, and pl. XIV, fig. 10. The Tewa call the three bright stars of Orion's belt *'agejc qwił'jη*, 'stars in a row' (*'agejc*, star; *qwił*, row; *'jη*, postfix indicating 3+ number, animal gender).

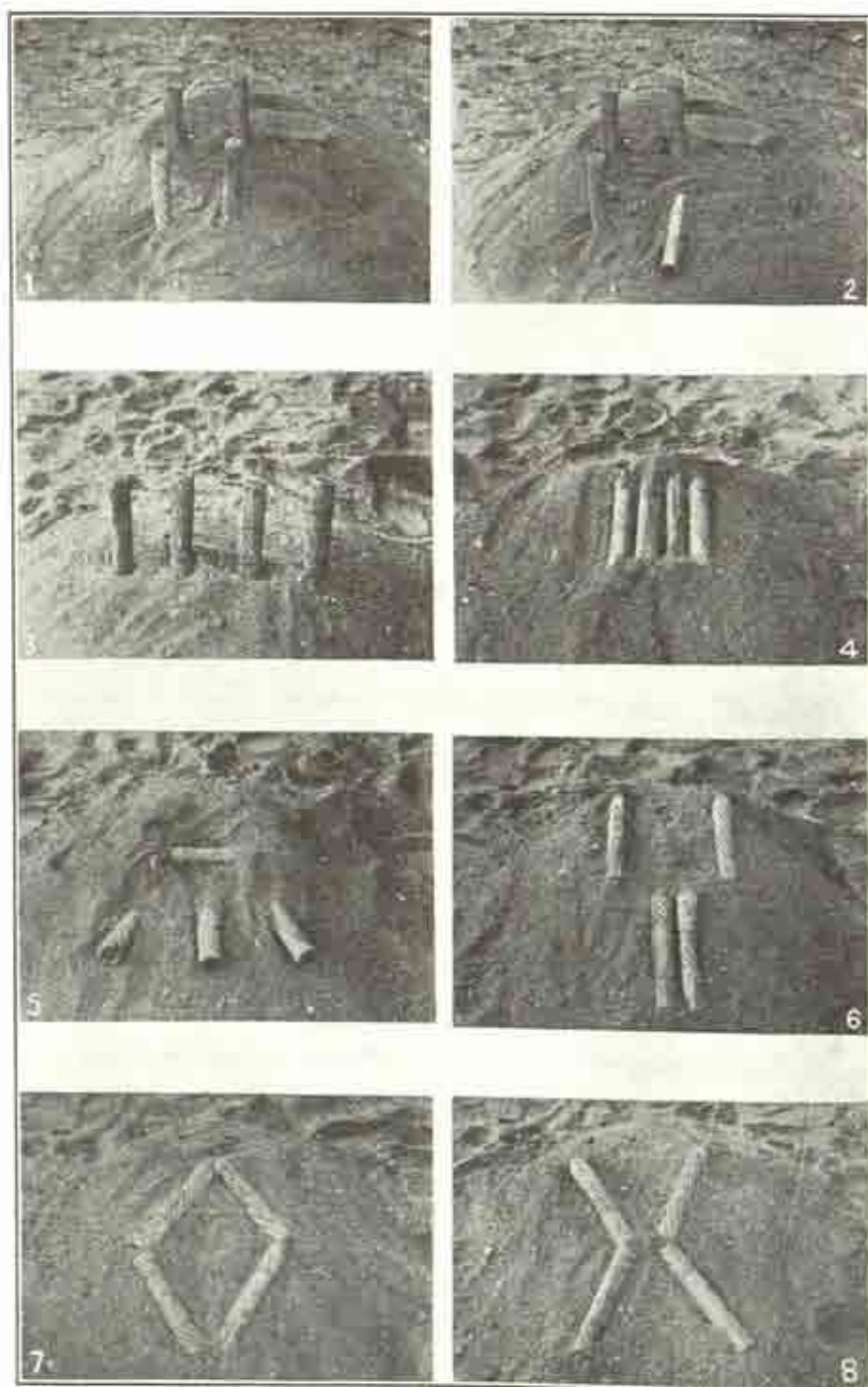
Pl. XIV, fig. 10. Tewa *nde'sc'jc*, 'big penis' (*nde*, penis; *sc'jc*, big). Also called merely *nde*, 'penis'. The v-shaped part represents the *wa'k'u*, 'testicles'. For other penis figures see pl. XIII, fig. 6, and pl. XIV, figs. 9 and 11.

5. FIGURES REPRESENTING HOUSES OR PARTS OF HOUSES

Pl. XV, fig. 1. Tewa *teqwa*, 'house'. *Teqwa* refers to a single house, not to a houserow, which is called *qwasuη*, nor to a pueblo or village, which is called *'ηwη*. This figure must not be confused with *'agejesc'jc*, 'the morning star' (pl. X, fig. 10).

Pl. XV, fig. 2. Tewa *teqwap'ε*, 'house rafters' (*teqwa*, house; *p'ε*, stick, pole, beam). These are known in Spanish as *vigas*. They are logs, usually of *ηwā'η*, 'rock pine,' which are laid parallel to each other at distances a foot or two apart across the tops of the house walls. They are covered with boughs, brush, and earth. After being felled, the logs were allowed to lie until they became lighter and were then taken to the village, each on the shoulders of several men. This figure is sometimes confused with *kwa'ε*, 'rain' (pl. IX, fig. 3), or with *t'ewa rejekwe*, 'the people are lying asleep' (pl. XIII, fig. 4). A rare divergent form of this figure is the same as *qwa-ts'ige*, 'street' (pl. XV, fig. 3). Still another arrangement is to place the sticks at the four corners of an imaginary square, oblong, or rhombus, laying them all parallel with each other; see *p'ε*, 'poles' or 'rafters' (pl. XV, fig. 7).

Pl. XV, fig. 3. Tewa *qwa-ts'ige*, 'street'. This word refers to streets or long open spaces between house rows in Indian pueblos. It differs from *p'ε'sc'jc*, 'great river' (pl. XII, fig. 6), in not having its sticks touch one another. A divergent form of *teqwap'ε*, 'rafters' (pl. XV, fig. 2), is identical with this.



FIGURES REPRESENTING THE HUMAN FORM, ITS PARTS, OR EFFIGY

1, *t'cwā*, people. 2, *wi t'cwā nāhe*, one person is sick. 3, *t'cwā simā'ō*, the people are marching. 4, *t'cwā tejekwō*, the people are lying asleep. 5, *sibē*, growth of hair on the face. 6, *nde'*, penis. 7, *sī*, vagina. 8, *hū'p*, doll.

Pl. xv, fig. 4. Tewa *ʃe'e*, 'ladder'. The word also refers to stairs. The Tewa constructed ladders, the rungs either being lashed on to or running through holes in the side poles. They were used in climbing to the houseroofs from the outside and in descending to the floor of the room from the roof-hole (*k'cjp'o*), and vice versa. The ladders used in gaining entrance to the *te'e*, 'kivas', were very long and projected high above the structure.

Pl. xv, fig. 5. Tewa *m̄benjend̄te*, 'melon watch-house' (*m̄benjend̄*, muskmelon, < Sp. *melon*; *te*, house, used in compounds). Little houses with frame of poles and sides and roof of brush are constructed for watching over fields where there are crops that are likely to be stolen. Often one side, or more, is open. People stay at and sleep in such shacks in order to guard their fields.

Pl. xv, fig. 6. Tewa *te'a*, 'tipi', 'wigwam' (*te*, house, in compounds; *a*, cloth). The *Jutā*, 'Utes', *K̄m̄q̄nt̄si*, 'Comanches', and some other tribes are known by the Tewa to live in such houses.

Pl. xv, fig. 7. Tewa *p'e*, 'logs', 'poles', 'rafters'. This is sometimes also called *teqwap'e*, 'house rafters'; compare *teqwap'e*, 'house rafters' (pl. xv, fig. 2).

6. FIGURES REPRESENTING WEAPONS

Pl. xvi, fig. 1. Tewa *su'e*, 'bow and arrow'. Matthews gives a Navaho bow symbol that looks like a capital letter B: "Diagram of the bow-symbol on the left leg of the personator of Nayénēzga-ni."¹ There is also occasionally a very obscene interpretation of this bow and arrow figure.

Pl. xvi, fig. 2. Tewa *sutsi'i*, 'arrow-point' (*su*, arrow; *tsi'i*, point). This figure may be confused with *j̄m'ηp'e*, 'spear' (pl. xvi, fig. 3). Fig. 16 in the chart shows an arrow-point copied from a San Ildefonso bowl. The form is identical with that of the cañute figure, although a Tewa arrow point actually had quite a different shape.

Pl. xvi, fig. 3. Tewa *j̄m'ηp'e*, 'spear' (*j̄m'η*, to pierce; *p'e*, stick, pole). This figure may be confused with *sutsi'i*, 'arrow point' (pl. xvi, fig. 2).

Pl. xvi, figs. 4, 5, and 6. Tewa *k'u'qwi'isipu*, 'belly of a sling'

¹ Washington Matthews, *Navaho Legends*, p. 253.

(*k'u*, stone; *qwił*, to sling; *sipu*, the hollow below a person's ribs). Fig. 6 is identical with *sí*, 'vagina' (pl. XIII, fig. 7). In order to obviate this identity the sling belly is usually shown turned as in fig. 4 or split in the middle as shown in fig. 5. The form split in the middle has its counterpart in San Ildefonso design; see the chart, fig. 17. If not carefully made, *k'u'qwiłsipu* is apt to resemble *tsiguwānu*, 'lightning' (pl. X, fig. 6), or *'agejesc'jé*, 'the morning star' (pl. X, fig. 10). What we call a diamond, rhombus, or rhomboid form, or tilted square or oblong, seems to be quite generally termed sling venter by the Indians of the Southwest. Thus the Franciscan Fathers give: "*beđdil't' nāhālln*, (slingshot-like), a diamond, also called *sōtso*, big star"; "*beđdil'thi* (slingshot), an elongated diamond"; "*beđdil't' baba dolāghās* (slingshot with serrated edge), diamond with serrated edge"; "*beđdil't', nāhāllnigi beđtqi'ds'ā'* (slingshot-like figures within each other), diamond within diamond."² Of the use of the *k'u'qwił*, 'sling', what the Franciscan Fathers say of the Navaho will apply equally well to the Tewa. "The sling-shot, consisting of a diamond-shaped piece of leather to hold the stone, and two cords, one of which is released in swinging it, is also used in killing birds, or throwing at sheep when herding."³

Pl. XVI, fig. 7. Tewa *tsijé p'a'*, 'sword' (*tsi'i*, point, blade; *jé*, augmentative; *p'a'*, flat and with roundish edge). The Tewa state that they probably had no weapon known by this name before the Mexicans came. The figure is identical with *p'εηwi'η*, 'cross' (pl. XVII, fig. 7).

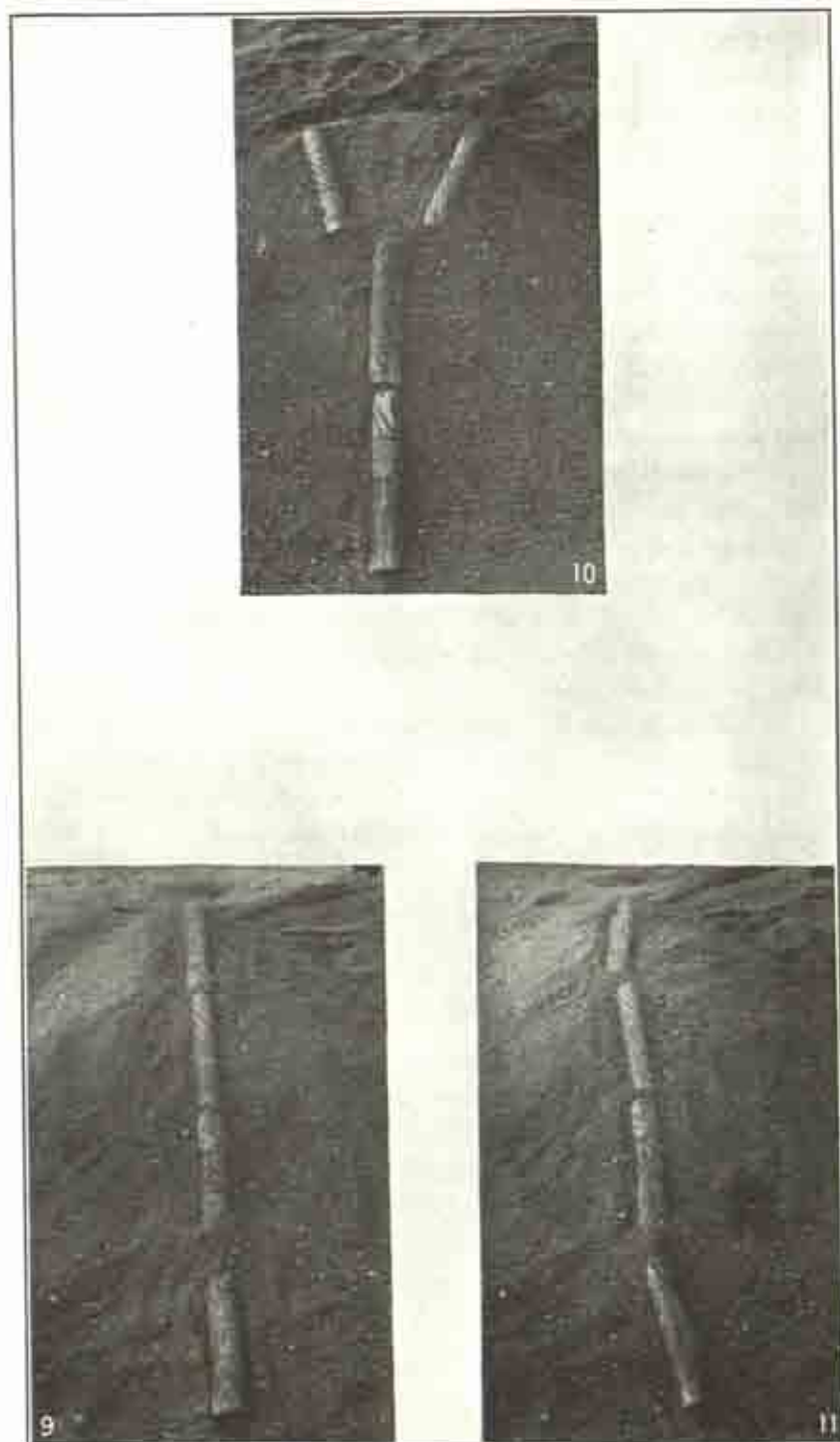
7. FIGURES REPRESENTING OBJECTS USED IN RELIGIOUS DANCES

Pl. XVII, figs. 1 and 2. Tewa *k'c sāsε'η*, 'Chifoneti horns' (*k'c sā*, Chifoneti; *sε'η*, horn). The Chifoneti fraternity is known as *k'csā* at the Tewa villages, as *k'εfāε* at Cochiti (Bandelier's "Koshaire") and as "*Néwekwe*" at Zuñi. Male members of this fraternity tie their hair in two horn-like bunches on certain occasions. These are called

¹ The Franciscan Fathers, op. cit., p. 251.

² Ibid., p. 252.

³ Ibid., p. 325.



FIGURES REPRESENTING THE HUMAN FORM, ITS PARTS, OR EFFIGY—Continued.

9, *kabajunde*, horse penis. 10, *nde se'je*, big penis. 11, *kabajunde*, horse penis, or *qwiñi*, in a line.

k'c'sās'η, 'Chifoneti horns'. Compare the head of a Chifoneti copied from San Ildefonso pottery (chart, fig. 18). See Mrs Stevenson's report on the Zuñi Indians for an illustration of a *k'c'sā* wearing his hair in this way.¹

The shape of the cañute figures is very realistic. The form shown in pl. XVII, fig. 2, is said to be preferable to that shown in pl. XVII, fig. 1, since it is not as easily confused with *'ck'uwā*, 'cloud' (pl. IX, fig. 1).

Pl. XVII, figs. 3, 4, and 5. Tewa *'ehē*, 'tablita headdress'. Thin boards, variously shaped and painted, are worn on the heads of women dancers in *tablita* dances, Spanish *tablita*, 'tablet', being the name given by the Mexicans to the boards and also the dances in which they are used. The *'ehē* are said to represent clouds, and some of them have the sun, moon, or stars cut or painted on them. A picture of one kind of tablita being worn by a maiden is found in Mrs Stevenson's report on the Zuñi Indians.² A cloud painting taken from San Ildefonso pottery and said to be an *'ehē* is given in the chart, fig. 19. The Franciscan Fathers call a similar pattern "*k'ōsyishckl'n* (cloud image)."³ The variety of the cañute tablita figure given in pl. XVII, fig. 5, is the same as *kueß*, 'rain' (pl. IX, fig. 4).

Pl. XVII, fig. 6. Tewa *pc'ewijē*, 'gourd rattle', or *pu'ηmbe*, 'bell' (*pu'η*, to make a ringing noise; *mbe*, small and roundish like a ball). Whether the Tewa obtained small metallic bells from the south in pre-European times is uncertain.

Pl. XVII, fig. 7. Tewa *p'ēηwi'η*, 'cross', literally 'standing stick' (*p'ē*, stick, pole; *ηwi'η*, to stand). The makers had in mind the Roman Catholic cross.

A GAME AS ACTUALLY PLAYED

It is an ideal method to describe a game as it was actually observed to be played. Such a description should always accompany a description of the general theory and rules of a game. The

¹ M. C. Stevenson, *The Zuñi Indians*, 23d Ann. Rep. B. A. E., Washington, 1904, p. 436.

² *Ibid.*, pl. 38.

³ The Franciscan Fathers, op. cit., p. 253.

cañute game described was played by four Indians whom we shall designate as A, B, C, and D.

D laid fifty kernels of corn as the pool on the ground about ten feet from pile no. 1, while all looked on. No stakes were made.

A hid the pin in one of two sticks on pile no. 1, their openings covered and their closed ends projecting toward pile no. 2. C walked from his pile to pile no. 1 and found the pin in the first stick he lifted. C and D therefore became the dealers.

1. The figure was XIII: 1. A guessed, finding the stick in the fourth stick guessed. D took four kernels from the pool and laid them near pile no. 1.

2. The figure was XIII: 8. B guessed, finding the pin in the second stick guessed. D took 6 more grains from the pool and deposited them with the others belonging to his side.

3. The figure was XIII: 8. A guessed, finding the pin in the third stick guessed. A and B now became dealers. No kernels changed hands.

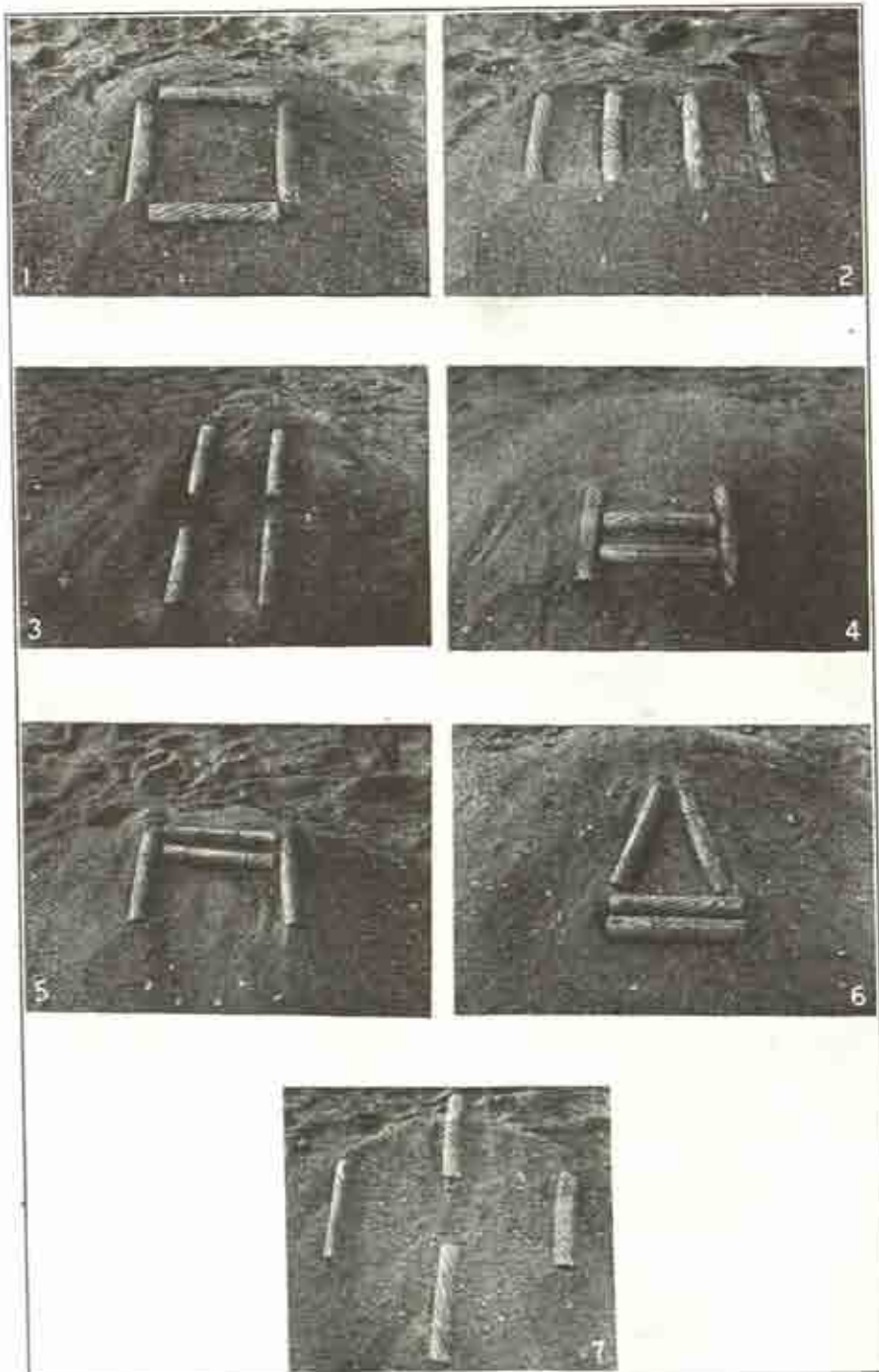
4. The figure was XV: 2. C guessed, finding the pin in the third stick guessed. B took ten kernels from the pool for his side, laying them near pile no. 2, the pile of his side.

5. The figure was XV: 2. C guessed. He said, after raising two of the sticks, that the pin must be in the *ti'j'ŋ*. He tapped the *ti'j'ŋ* with one of the sticks he had taken up and then quickly lifted the other stick remaining on the pile, which he had not tapped. The pin was not in it. That showed that the pin must be in the *ti'j'ŋ*, as he had shown that he thought it was by tapping it. C and D's side got the deal.

6. The figure was XV: 2. D cautioned A and B to stay by their own pile while he was putting the pin in. "Go back to your place; don't be watching here," he said. B guessed, finding the pin in the second stick guessed. C took six kernels from the pool for his side.

7. The figure was XV: 2. A guessed, finding the pin in the fourth stick guessed. C took four kernels from the pool for his side. "You are a good guesser; you know every time," he said to A.

8. The figure was X: 8. B guessed, finding the pin in the fourth



FIGURES REPRESENTING HOUSES OR THEIR PARTS

1, *teqou*, house. 2, *teqwap'e*, house rafters. 3, *qwats'ige*, street. 4, *je'e*, ladder. 5, *mbexpendi'e*, melon watch-house. 6, *te'a'*, tipi. 7, *p'e*, poles or rafters.

stick guessed. C took four kernels from the pool for his side. C was singing the cañute song while B was guessing.

9. The figure was XV: 2. B guessed. C continued to sing.



CHART OF DESIGNS COPIED FROM SAN ILDEFONSO AND ANCIENT PUEBLO POTTERY

"Tā', tā'," he said as he stopped singing, and slapped B on the back. B guessed, finding the pin in the third stick guessed. No kernels

changed hands, of course. A and B became dealers, A hiding the pin. A noticed that only two kernels were left in the pool.

10. The figure was IX: 3. C guessed, finding the pin in the fourth stick guessed. B took the two kernels left in the pool for his side, though his side really deserved to have four, of course. From now on forfeits had to be paid out of the pools of the sides, for all the kernels were in possession of one side or the other. There was no common pool any more.

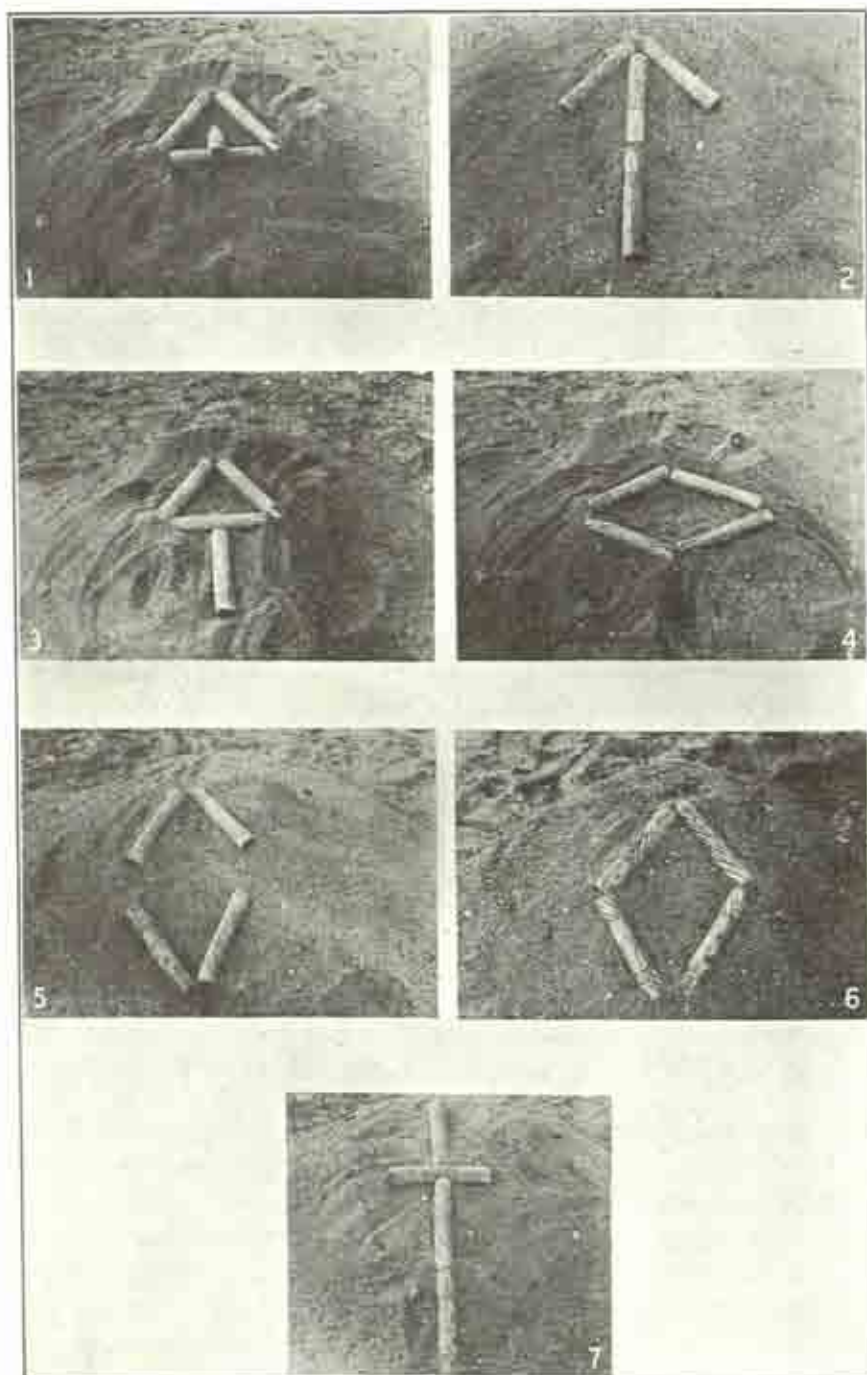
11. The figure was IX: 4. D guessed, finding the pin in the third stick guessed. "Come get your money," C called out. A went over and received ten kernels from C and D's pool.

12. The figure was XVII: 3. C and D assisted each other in guessing, finding the pin in the first stick guessed. Meanwhile B sang loudly portions of the Mexican versions of the *cañute* song.

13. The figure was XVII: 1. C lifted the first stick, D the second, but according to C's directions. Then C stood the stick he had taken up on end so near the ones remaining untouched that if it fell it might hit one of them. He held it in this position with the fingers of his right hand. When it fell it did not hit one of the sticks still lying, but pointed toward one. Then taking the stick which D had taken up, C struck with it the stick on which the divining stick had not fallen. This stick was then lifted by him, and the pin was not in it. But the pin was not to be found in the remaining stick either. "Where is it?" exclaimed C. At last the pin was found by C stuck in one of the sticks. As to the order in which this stick was raised, there was a dispute. And so A hid the pin and arranged the figure again—the same figure as before. And C and D guessed again, finding the pin in the third stick guessed. C and D's side now got the deal, or rather "got the sticks," as they put it.

14. The figure was IX: 5. B found the pin in the fourth stick guessed, and paid C and D four kernels.

15. The figure was XII: 1. A and B took turns guessing. C tried to make them think the pin was in the wrong stick. They found it in the fourth one which they guessed and paid C and D four kernels. "Yes, but you don't make ten a single time, only four, four, four," said A.



FIGURES REPRESENTING WEAPONS OR THEIR PARTS.

1, *sut'e*, bow and arrow. 2, *sut'i'i*, arrow-point. 3, *ju'np'e*, spear. 4-6, *k'u'qwi-tsipu'*, 'belly-of-sling constellation.' 7, *tsij'p'a'*, sword.

16. The figure was XIII: 6. C said, "Four, four, all the time, just four, but now the pin will be in the first one you pick up." A guessed. "I will take the *pinda*, 'point of the penis', first" (the figure was a penis), said A. There was no pin in it. "I fooled him," said A. "You will find it in the *mudasq'ndc*, 'old mule', then," said C. "I shall find it in his testicles," said A. A lifted the other stick, which formed the penis, but no pin. Then he raised one of the other sticks, but it did not contain the pin. Last of all he took up the 'old mule'. In it was the pin. C fairly shouted, "I told you so!" "And I said I was going to pay you only four all the time," said A. He paid C four.

17. The figure was XIII: 7. "Now you fellows are going to give me ten kernels," said C. A found the pin in the first stick guessed. "C told me he put the pin into that stick and I believed it," said A. C took the ten kernels.

18. The figure was XIII: 7. A and B assisted each other in guessing, using a stick to divine with as described before. They found the pin in the third one guessed, and got the deal.

19. The figure was XIV: 10. One of the sticks representing a testicle had its open end pointed away from the center of the figure. C insisted that because of this carelessness the sticks must be forfeited to his side. The faulty dealers did not object.

20. The figure was XV: 1. A guessed, finding the pin in the second stick guessed. B paid C six kernels.

21. The figure was XIV: 10. C said, "He is going to pay me ten." A guessed, finding the pin in the first stick lifted. C and D's side was paid ten kernels, which just took all the kernels A and B had left. "It just came out even," said C. "I wish I had something to divide with you," said C to D, meaning that he wished the game had been played for stakes. "*Hĩ'wec' nq'c' hq'*," 'He knows how to play well' (*hĩ'wec'*, well; *nq'*, he; *c'*, game; *hq'*, to know), said D, referring to C.

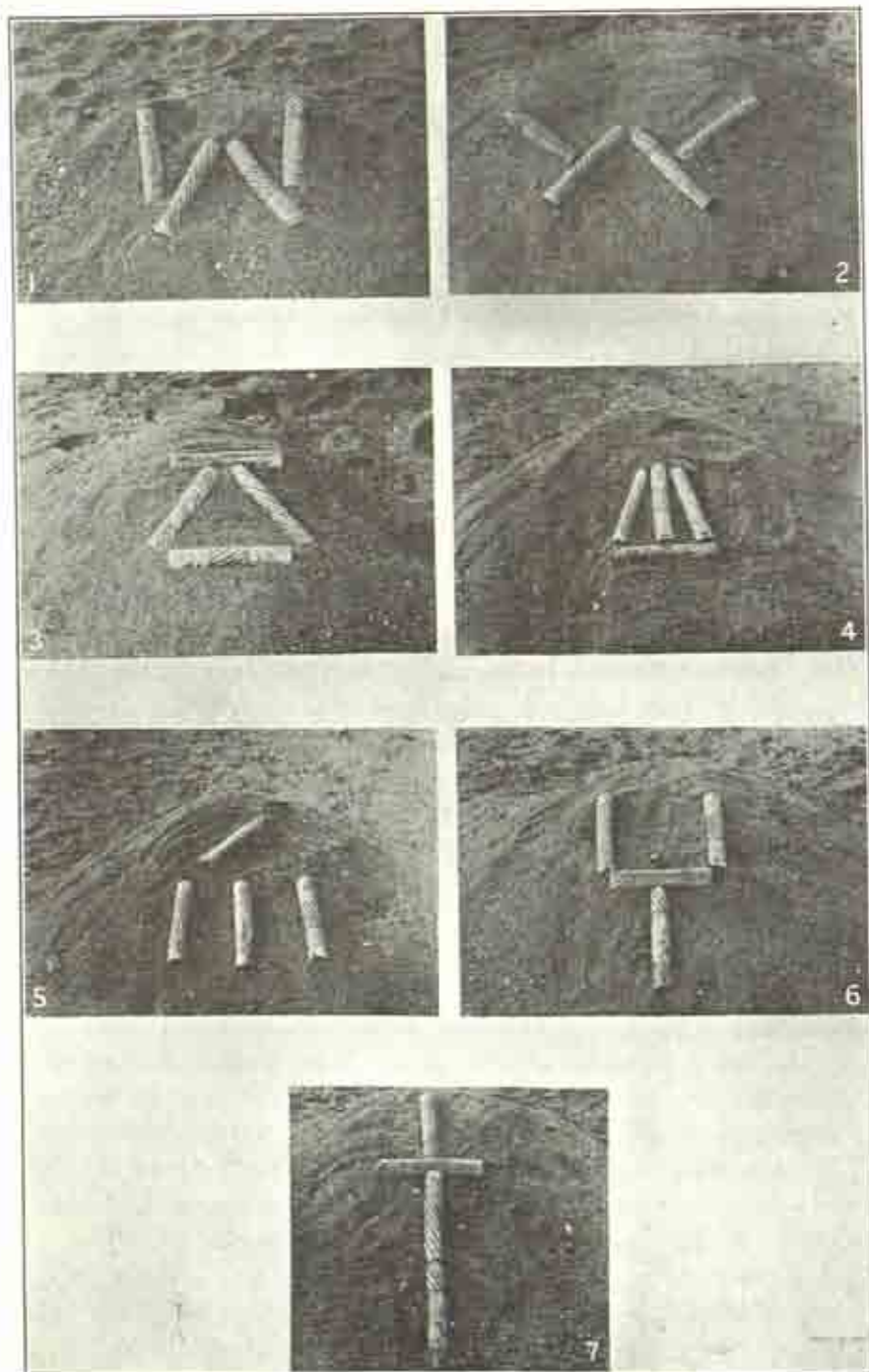
Some expressions heard during the game were: *ngānuwā'*, "you 1 guess!" (*ngā*, you 1, prefixed pronoun, second pers. sing.; *nuwā'*, to guess); *mbinuwā'*, "you 2 guess!" (*mbi*, prefixed pronoun, second pers. sing.; *nuwā'*, to guess); *nq' actpuwgi c'*, "I am going to hunt

or guess' (*nā*, I, emphatic pronoun; *ndc*, I it, prefixed pronoun denoting a combination of first pers. sing. subject and third pers. sing. object; *tpwā*, to hunt; *gi'c'e*, future tense sign); *ndcfa*, 'I have found it' (*ndc*, I it, prefixed pronoun denoting a combination of first pers. sing. subject and third pers. sing. object; *fa*, to find); *nā*, 'cāq' *npē*, 'I have won' (*nā*, I, emphatic pronoun; 'c, I, prefixed pronoun; *tp'ē*, a winning; *pē*, to make); *nā*, 'ckate's, 'I am hiding it' (*nā*, I, emphatic pronoun; *ndc*, I it, prefixed pronoun denoting a combination of first pers. sing. subject and third pers. sing. object; *kate's*, to hide); 'm'p' *'phcjc'i'i*, 'you I lied' ('m'p, you I, emphatic pronoun; 'm, you I, prefixed pronoun; *hcjc*, to lie; 'i', there); *k'm'p'ē'iwe'i'i* *k'm'p'ē'i*, 'the corn kernels in the pool' (*k'm'p*, corn plant; *te*, house, in compounds; 'iwe, there, where; 'i', postfix denoting 3+ number, vegetal gender, referring to *k'u'p'ē'i*; *k'm'p*, corn plant; *k'ē*, kernel, grain); *nā*, 'i' *nmbi wakū'ingē'i* 'ibiwa' *andē'e*, 'we 3+ are paying from our side' (*nā*, 'i' *nmbi*, of us 3+, emphatic pronoun; *wakū*, side; 'ingē'i, from a side, locative postfix; *ibi*, we 3+, prefixed pronoun; *wa'a*, to pay; *ndē'e*, element denoting progressive tense); 'c'i' *wi'c' k'uwā scbc*, 'that goat-beard' ('c, there; 'i', postfix denoting singular number, animal gender; *wi*, one; 'c, there; *k'uwā*, mountain sheep, goat, sheep; *scbc*, beard, growth of hair on the face); *pu'p'c'k'm'p'ē*, 'dark anus' (*pu'*, base, buttocks; *p'c*, hole; *k'm'p'ē*, dark); *wa'k'u'p'p'a*, 'brown flat testicles' (*wa'k'u*, testicle; 'p', brown; *p'a*, flat); *pindal'a*, 'dry penis' (*pinda*, point of penis; *l'a*, dry).

CAÑUTE AT OTHER PUEBLOS

In studying the game of *kate'c'p'ē'e* as played at San Ildefonso we could doubtless find, as elsewhere in the ethnology of the Tewa, strong evidence of acculturation. We probably have in this game a blending of Indian and Mexican elements. A comparative study of the forms of the game current at the various pueblos would probably reveal important facts concerning its history.

Most of the literature on the "hidden ball" games of the Pueblo Indians is contained in the report by Culin previously cited, in which pages 335-339 are introductory to this class of games,



FIGURES REPRESENTING OBJECTS USED IN RELIGIOUS DANCES

1, 2, *k'c'sds'e'η*, chifoneti horns. 3-5, *'che*, head-dress. 6, *pe'wije*, gourd rattle, or *p'e'ηmbe'η*, bell. 7, *p'e'ηwi'η*, cross.

pages 351-353 describe the Keresan, 357-364 the Hopi, 367-370 the Tanoan, and 372-382 the Zuñi forms.

Mrs Stevenson describes the Zuñi form of the game under the name of "i'yānkolo'we" in her report on the Zuñi Indians,¹ and in addition contributes a description of the game to Mr Culin's report.

At Jemez some names of objects pertaining to the cañute game were obtained by the writer. The game is called by the Jemez *pá'cū'wā*, 'cane game' (*pá'ā*, cane,? *Phragmites phragmites*; *cū'wā*, game). The sticks appear always to be made of cane. A cañute stick is called *pá'ā*, dual *pá'āf*, 3+ plural *pá'ā*. The pin is called *ʔek'i'jūf*, 'little stick', dual *ʔek'i'jūf*, 3+ plural *ʔek'i'jū* (*ʔe*, stick; *k'i'jū*, diminutive). The reed sticks shown in fig. 21 are from Jemez, and their markings may be compared with those of the set from San Ildefonso shown in the same figure. They are called

- (1) *k'i'clā*, 'at the top', referring to the one band (Tewa *wi'jī*).
- (2) *witā*, 'at two places', referring to the two bands (Tewa *wijē'jī*).
- (3) *pctā*, 'in the middle', referring to the band (Tewa *tū'jī*).
- (4) *pčdā*, said of big or bad freckles, referring to the spots (Tewa *mulāsē'ndc*). The corresponding stick at San Ildefonso is never spotted.

The Jemez play cañute mostly in winter: *lcc'* *ʔpá'cū'wānē'ŋ'*, 'in winter they play cañute' (*lcc'*, winter; *ʔe*, they 3+; *pá'ā*, cañute stick; *cū'wā*, to play; *nē'ŋ'*, progressive).

The following information was obtained from an Isleta Indian at Albuquerque. The Isleta call cañute *patul*, which the informant could not etymologize. The stick with a single band near one end is called *wimā*, 'one'; the stick with a single band near each end is called *wisi*, 'two'; the stick which is spotted all over is called *tērc*, 'spotted'. At Isleta the sticks are made of wood and are called *ja'u*, 'little sticks' (*ja*, wood; *'u*, diminutive).

A Taos Indian at Santa Fé furnished the following. The Taos call the game *kañute* (< Sp. *cañute*) or *kañute'āpanā*, 'cañute game' (*kañute*, *cañute*, < Sp. *cañute*; *'āpanā*, game). The sticks are made of wood and are called *i'ufitānā*, which the informant could not etymologize.

¹ M. C. Stevenson, op. cit., pp. 318, 333-341.

To witness a game of *kate'ε p'ε'ε* as played at San Ildefonso is an experience not soon to be forgotten. The game, as well as its setting, is picturesque. The old men take as much pleasure in playing it as do the little boys, and it seems just as real and important to them.

The antics of the "good guessing men" and the series of changing figures make the game entertaining to both player and onlooker.

SCHOOL OF AMERICAN ARCHEOLOGY

SANTA FE, NEW MEXICO

CERTAIN RARE WEST-COAST BASKETS

By H. NEWELL WARDLE

THE basketry of primitive peoples, though one of the latest subjects to attract the attention of the ethnologist, is now recognized as well worthy of the closest study. Not only does it frequently represent the highest artistic expression of its maker, but it may point the way to important ethnologic conclusions. Its evidence is weighty, though never final, since today the dismemberment or forced association of kindred and of alien tribes on reservations, and the arbitrary demands of the white trader, are making sad havoc with this native art, while even in prehistoric times intertribal contact, in war, trade, and friendship, gave to local varieties a wider distribution. This latter, the natural increasing range of the basket—whether as loot, merchandise, or gift—is a valuable indicator, and opposed to the modern and wholly vicious artificial transplanting of types. The present limited knowledge of the older basketry renders important the publication of accurate descriptions of every genuine old specimen. The five which form the subject of this paper have been selected from the collections of The Academy of Natural Sciences of Philadelphia as differing, in one way or another, from any basket previously described.

The small covered basket (pl. XVIII, *a*) came to its present abiding place more than thirty years ago. It is unquestionably a Tlingit product, and is assignable to Emmons' type 16.¹ It exhibits the characteristic shoulder of the jar-shaped *qwutle-qwut* ("round or egg-like belly"), while the lid is surmounted by the rattle from which type 14 takes its name, *tudar-huck* ("noise inside"). More squat

¹ G. T. Emmons, *The Basketry of the Tlingit*, *Mem. Amer. Mus. Nat. Hist.*, vol. III, p. 255. Whether the lid to type 16 carries the rattle as does that of type 14 is not stated, but from the specimen figured by O. T. Mason (*Smithson. Inst. Ann. Rep.*, 1902, U. S. N. M., p. 67) it evidently has this characteristic.

in appearance than the jar figured by Emmons, the Academy's basket reaches only 81 mm. (c. 3.2 inches) in height, lid included, while its greatest diameter is 116 mm. (c. 4.6 inches).

The weave of the bottom is mostly the *khark-ghee-su't* ("between") or alternating two-strand twining and wickerwork, while the remainder of the basket shows only the regular *wush-tookh-a'r-kee* ("close together work") or two-strand twining, and is finished at the edge by trimming the warp. Into this basic fabric of spruce-root is woven the false embroidery or overlay twining of grass—the *uh-tah yark tu-twage* ("outside lifted up and put round").¹

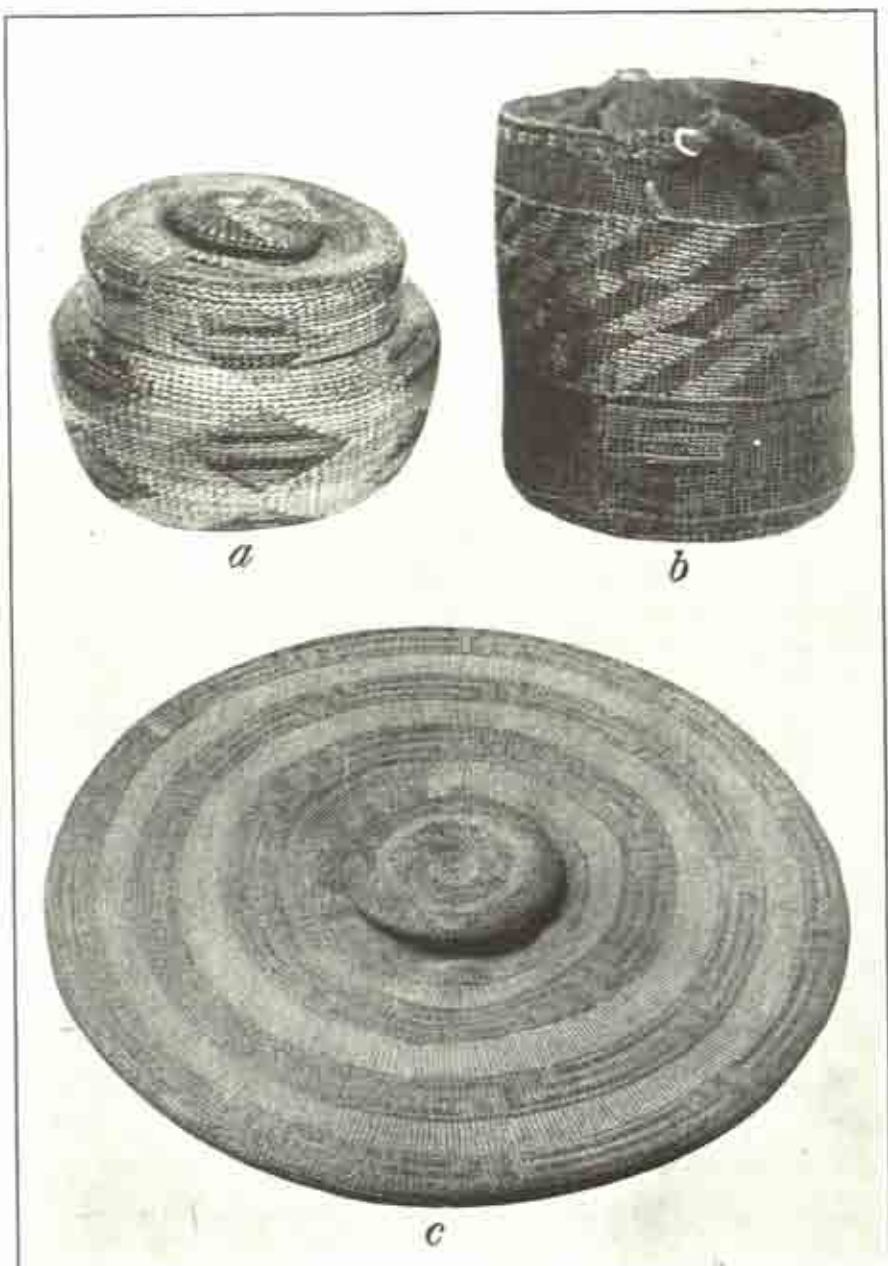
The embroidery begins where the warp turns up to form the side of the jar, and ends at the basal line of the neck. The design of the body, which is continued onto the rim of the lid, presents, when the latter is in place, six vertical rows of lozenges,—two and a half to the row,—each outlined by skipping two consecutive stitches in the overlay, thus permitting the dull-brown spruce-root twining to appear on the surface. Within this outline the false embroidery is continued—no longer in the sheeny pale straw of the *kha'kar shark* ("true straw"), but in a deeper, more brownish shade,² intersected by two longitudinal bars of black, each two rows of stitches in breadth.

The lid is surmounted by the ingenious closed chamber, containing the little pellets, whose rattle recalls to the native mind the sound of shifting pebbles on a shingle beach. This knob, 45 mm. (c. 1.8 inches) in diameter, is embroidered in the graceful fern-frond pattern (design 43, "the young fronds of the fern as they come up from the root and curl round"),³ in two colors—the pale straw and the deeper shade forming the alternate fronds on the dyed spruce-root ground. The only portion of the spruce-root twining that is not in the natural color is this central or upper face of the knob. In all probability it was originally dyed red, though its hue is now dark-brown with only a suggestion of ruddiness. The

¹ Emmons, *op. cit.*, p. 242. Also O. T. Mason in *Bull.* 29, U. S. N. M., part P, fig. 28.

² The straw may be the same, but, if so, it has certainly been dyed and has faded. Its luster is not so high.

³ Emmons, *op. cit.*, p. 276.



a. COVERED BASKET, TLINGIT (Haldeman collection, A. N. S. P., No. 11477). b. BERRYING BASKET, TLINGIT (Schluffer collection, A. N. S. P., No. 11478). c. EMBROIDERED HAT (A. N. S. P., No. 11479).

three series of stitches forming the neck of the knob, and the three rows of the lid proper appearing just beyond the line of junction and under which the warp-strands of the former are inserted, are in ordinary twined weaving of uncovered spruce. Beyond this, the overlay recommences in solid blocks of pale straw, relieved by the "footprints of the brown (black?) bear" (Emmons' design 6).¹ Each of the three footprints is outlined in the dull spruce-root of the basal fabric, and within this lining of uncovered weft the overlay recontinues in the deeper shade and black, forming alternate bars, each two stitches deep.

At the base of the footprint series the warp-strands turn sharply down to form the cylindrical rim, and here the motif of the basket itself recurs in a series of alternating diamonds and triangles—the latter probably considered by the maker as the "half of the head of the salmon-berry," though in reality nothing more than a potential lozenge. This identity of motif on the body of the basket and the rim of its lid is in accordance with the Tlingit custom and serves as a recognition mark.

In form, weave, embroidery, and in two of the three elements of its ornamentation, the basket is characteristically Tlingit. It is unusual, though by no means unique, in the absence of strongly marked bands. Its peculiarity consists in the treatment of the lozenge, or "eye", which forms the decorative feature of the basket body and reappears on the rim of the lid. I know of no other Tlingit basket in which the lozenge is intersected by horizontal bars, and in this case it seems probable that the concept of the completed basket, with the barred footprints of the brown bear upon the flat surface of the lid, reacted upon the body motif, the "eye", to produce a design more realistic and harmonious. Yet it may well be that this is not an individual characteristic, but a lost or hitherto unrecorded pattern, and, as such, bears its special Tlingit designation.

A second art product from the same culture province is the tam-o'-shanter shaped hat figured on plate XVIII, *c*. Its greatest diameter is 419 mm. (*c.* 16½ inches). The head-band measures

¹Emmons, *op. cit.*, p. 265. Is the word "black" in the explanation of pl. v, fig. 5, merely a misprint for "brown"?

597 mm. (c. 23½ inches) in circumference and is 65 mm. (c. 2½ inches) in height. The hat is woven in the ordinary two-strand twining of the Northwest coast, with the stitches driven home so close and hard as to give a beautiful beaded appearance to the fabric. The edge is finished with the three-strand border (Emmons' border type 5)¹ frequently used for hats. The material is spruce-root, upon which an overlay is applied in concentric bands of "false embroidery" in straw of a rich golden-brown hue. The flat, button-like elevation of the crown, 108 mm. (c. 4.3 inches) in diameter, carries on its surface two bands of the "leaves of the fireweed" pattern.² The rhomboidal leaves are turned in opposite directions on these bands.

Then succeeds, around the slightly constricted, almost vertical neck of the knob, a series of solidly embroidered rectangles,³ delimited above and below by a single embroidered line—"cross-bar of the drying frame"⁴ as shown in the figure. Beyond this constriction, the



broad flare of the upper surface presents four spaced, concentric bands of embroidery. The innermost of these repeats the fireweed motif, the leaves being directed in accordance with those of the first circle. The remaining three, in conformity with the three worked bands of the piece's inferior aspect, show the well-

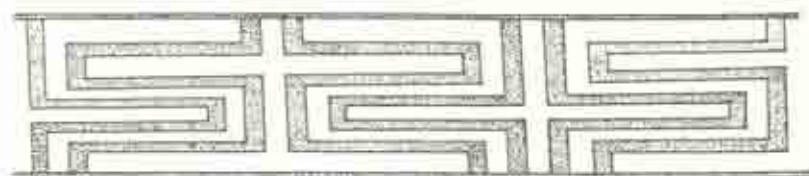


FIG. 27.—Design on hat-band. (A. N. S. P. no. 11478.)

known "shaman's hat" pattern.⁵ The deep hat-band below is decorated with a variant of the "tattoo" figure⁶ (fig. 27).

¹ Emmons, *op. cit.*, p. 246.

² *Ibid.*, p. 266, design 10.

³ Possibly these blocks form nothing more than a variant of the fire-weed motif, though unnoted in Mr Emmons' text. See his plate XI, fig. 6.

⁴ Emmons, *op. cit.*, p. 269, design 20.

⁵ *Ibid.*, p. 274, design 36.

⁶ *Ibid.*, p. 273, design 35.

Unlike the example of this pattern figured by Mr Emmons,¹ the tattoo does not alternate with the simple "cross." In its individual parts it is rather an abbreviation of the old tattoo mark on the thumb than a variation of that on the metacarpals of the fingers. The result of the juxtaposition of paired units is, however, noteworthy, since the included figure thus produced is not, strictly speaking, the "cross," neither is it the tau-shaped ceremonial war-club nor its doubled art-form Σ . A closer inspection will, I believe, reveal its connection with the "raven-tail" pattern.² Compared with that motif, it shows itself as the negative of a flattened and elongated but less ornate form of Mr Emmons' variant *a* of design 31 (figs. 29, 30).

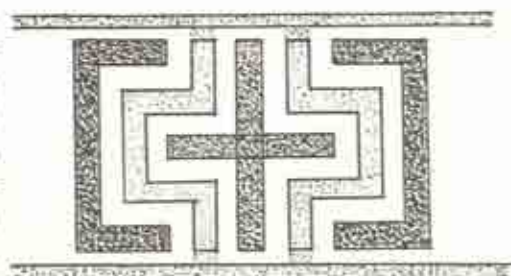


FIG. 28.—Raven-tail design, after Emmons' variant *b*, showing modification to cross design.

In the actual tattoo mark, the bars on the wrist, the double series of triple lines of dots on the forearm, which complete this personal decoration, show it to be a much conventionalized representative of a very ornate figure. In basketry this motif is always presented in double lines. So, too, the raven pattern exhibits line within line to the last degree of complication, and is (barring designs of modern introduction) practically the only motif of which this is true. Is all this mere chance? There is perhaps no more unstable and treacherous foundation on which to base the pillars of a psychic bridge than basketry design. And yet what is—or rather, was—

¹Op. cit., pl. xii, 4. I am by no means convinced of the correctness of the identification of the cross, even in this instance, so long as it remains uncertain that the tattoo-cross explanation of the design on this basket was given by its maker. Individual license is broad, the tendency to experimental originality great. The slightest lengthening of a single recurrent line of variant *B* of the raven-tail pattern (loc. cit., p. 272) will, when placed between the characteristic delimiting lines—"cross-bars of the drying-frame"—produce a figure identical in outline with the embroidered bar on this basket. (Fig. 28.)

²Emmons, op. cit., pp. 272-273, designs 30, 31, and 32.

the symbolism of this figure, tattooed upon the back of the hand of some of the elder members of the tribe? If a connection be admitted between the tattoo mark and the raven, as this instance would tend to suggest, an hypothesis explaining the *raison d'être* of the tattoo mark is not far to seek. Not only is there a Raven clan,¹ but this bird assumes a paramount place in the daily life, the art, and the mythology of the whole people. Only one basketry design, it seems, bears the significant title *shon ghe-kulth kah ka'tch-ul-tee*, "old person's hand back of tattooed", and the original

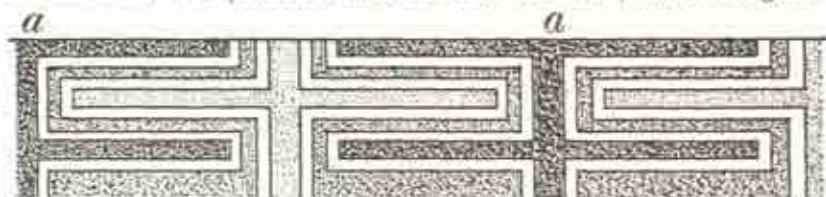


FIG. 29.—Differentiated negative of design on hat-band, showing relationship to raven-tail design in fig. 30.

of that motif Mr Emmons has succeeded in discovering upon a single individual. But the former fact, while strongly suggestive, does not in itself force the conclusion that this was the sole symbol tattooed in ancient times. The Wolf clan may also have possessed its distinctive mark, yet to be discovered.

But, leaving aside this speculation, if the tattoo mark had no reference to the clan of the raven (since Mr Emmons declares it lacking in totemic significance, and merely a mark of distinction),² what better, more forceful way to express that tribal rank than by the symbol of the great god Yehli, the raven?

Let me go one step farther and inquire as to the relation of the "raventail" motif to the individual from which it takes its name. Mr Emmons states: "In the minds of the people, it is unconnected with the preceding figure [the cross of the orthodox Russian church]. It seems to be purely symbolic in character, and bears no trace of resemblance to the natural object." By reason of his ancient office of "thunderbird," from which the eagle seems now to have dis-

¹ H. H. Bancroft, *Native Races of the Pacific Coast*, vol. 1, p. 109.

² Emmons, *op. cit.*, p. 273.

possessed him, Yehlh, the raven, was ruler of the winds, and hence of the four quarters of the world. May I then suggest that in this conventional and ornate figure there survives the Tlingit cosmic symbol of the universe, with the cross of the winds in its center? Perhaps it is not mere chance that the apparently most complete, though by no means the most elaborate, of the three variants figured by Mr Emmons consists of the central cross and six enclosing borders, thus producing the cosmic seven which has entered so

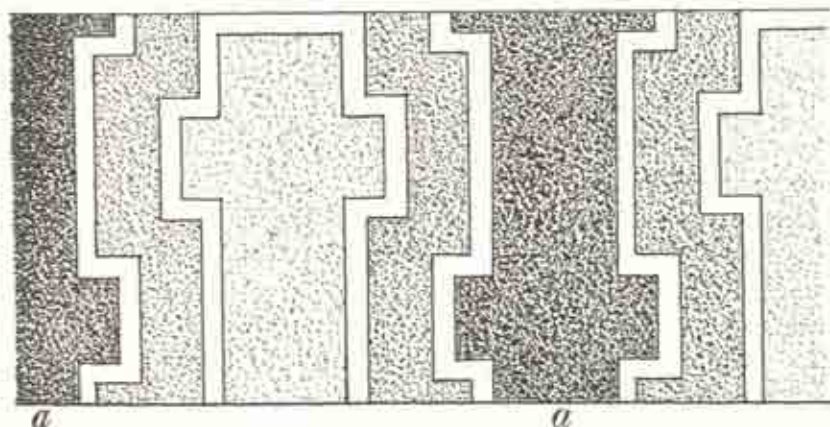


FIG. 30.—Raven-tail design, simplified after Emmons' design 319.

largely into the esoteric thought of primitive peoples in the New as well as the Old World.

The hat above described appears to be very old, and was received by the Academy at some unknown date prior to 1876. It is peculiar both in decoration and form. Except in the matter of patterns arising from technique,—the skip-stitch, "hood of the raven,"—the ornamentation of the Tlingit hat is produced by painting and not by embroidery. The example under discussion shows no vestige of paint, and, as stated above, is embroidered in rich golden-brown straw, and in designs typical of the art of this culture province. No other West coast hat of this form has been described, and the question unavoidably presents itself: Is this a genuine native creation, or a native copy of some foreign head covering?

¹ Emmons, *op. cit.*, p. 241. Weave 3 and p. 268. Design 16.

To the student with a bias toward acculturation theories, the braid bonnet of some Scotch fur-trader immediately suggests itself as a model for imitation in straw—an ordinary sailor's hat would not explain the knob in the center of the crown.¹

The alternative—a purely native creation—is one that may well be defended. Any study of the Tlingit head-covering involves an inquiry into the meaning and origin of the *khuke*, the tall ceremonial hat so conspicuous in their carvings. Its most striking feature is the series of woven cylinders rising above the truncated cone—a species of insignia of rank. Their origin is, I believe, unknown. In the lid of the little *tudar-huck* (pl. XVIII, a) occurs a similar cylindrical elevation, but in the covered work-basket the esthetic *raison d'être* of the hollow chamber is obvious. Although apparently no evidence, linguistic or otherwise, is available for the proof, I strongly suspect that, in native thought, the lid of the *tudar-huck* basket is regarded as its covering or hat, and it is quite possible that this little sounding basket lid preserves an earlier form and meaning of the excrescences on the Tsimshian ceremonial hat—a rattle. The multiplication of the cylinders, one above another, in a wholly natural attempt to express added dignity and importance, induced the retention of the cedar-block model as a guaranty of rigidity. This would, of course, abolish the rattle, the appeal for distinction being transferred from the ear to the eye. If this suggestion for the origin of the *khuke* type be accepted, the hat under consideration would then be seen to exhibit only the vestigial remnant of the original organ—the button-like elevation, open within, being neither a rattle, like that of the basket lid, nor a cylinder of the ceremonial har.

It is evident that there is something to be said in support of an uninfluenced American origin, as well as in advocacy of acculturation.

In brief, the case stands thus: On the one hand, the specimen has a strong resemblance to a tam-o'-shanter magnified in straw;

¹ Dr C. Hart Merriam was inclined to see in it a copy of an old Russian hat, but I have been unable to find any Russian head-covering at all resembling this Tlingit piece, in any work on European costume.

on the other, a more flat hat was formerly in use on the Northwest coast; a basket rattle is still occasionally met with there; the *tudar-huck* was capped with a lid, bearing a flat cylindrical rattle; the cylinders of the ceremonial hat may be regarded as so many rattles, which, for technical reasons, no longer function; the Academy's Northwest coast hat is broad and flat, is surmounted by a hollow chamber, shaped like the rattle upon the basket lid, but open below like the *khuke* cylinders. Though the evidence is probably not all in, I trust the defence may be deemed strong enough to warrant a rendering of the old Scotch open verdict—acculturation "not proven."

Among the Tlinkit baskets forming a part of the collection of the late Dr Charles Schäffer, presented in recent years to the Academy, is one which calls for special mention (pl. XVIII, *b*). It is a *sahk-kah to'n-nar*, or small berrying basket (Mr Emmons' type 1) of spruce-root, dyed brown or weathered dark by age, and embroidered in natural and in golden-brown straw. Its rich tones are conspicuous among the gay hues of the more modern baskets. Dr Schäffer obtained it in 1888 in the neighborhood of Fort Wrangel, and it appears of considerable age, having undoubtedly seen service.

The basket has a height of 125 mm. (c. 5 inches) and a diameter of 107 mm. (c. 4¼ inches). Two loops of twisted deer (?) skin, placed upon opposite sides, serve for the attachment of the neck-cord. The border, a variant of Mr Emmons' border type 7, is produced by grouping the warp-strands into bundles of two and turning them down on the inside under the next weft-stitches, which, in this final series, are heavier and of twice the usual length.

Below this selvage, a line of embroidered dots is to be seen. The chief decoration consists in three bands of "leaves of the fire-weed" separated from each other only by the single line, "cross-bar of the drying-frame," by which also they are flanked above and below. Beneath this triple band two examples of the thumb "tattoo" pattern are placed, one upon each side of the basket, below the above-mentioned suspension loops. These latter figures are in the darker, richer shade of the straw.

It remains to mention the peculiar feature of this small utensil.

The weave is a two-strand twining, but the direction is *from right to left*, while the stitch passes over and down to the left on the outside, then inward. It will thus be seen to be the ordinary Tlinkit "close together" weave, reversed in trend while the technique remains the same. This left-handedness of the maker (for that I assume it to be) has had the effect of reversing the slant of the woof-stitch, and, in consequence, that of the embroidery stitch as well. Though strongly and closely woven, there is a notable undulation of the stitch series and a lack of perfect symmetry in the basket's contour which seems not wholly due to warping. The selvage, too, while it does not lack strength, has a hummocky appearance, which indicates rather *gaucherie* than lack of care.

In marked contrast to this last is the exquisite little grass cup (pl. XIX). It is 101 mm. (c. 4 inches) high and has a diameter of 70 mm. (c. 2¾ inches), being cylindrical in form. The basket is not embroidered save in a single circumplexion marking the circumference of the bottom, the designs being wrought in the weft itself and consequently reappearing, in large part, on the less finished interior.

The warp element is so minutely divided and so closely covered as to leave its nature in doubt. The woof materials are a fine pale straw-colored grass, and, if I am not mistaken, the stem of the maidenhair fern. Whether any other grass enters into the weaving is uncertain; at least two other shades appear along with the pale straw color and the lustrous blue-black of the above-mentioned elements—a reddish brown and a yellow of a deeper hue—but, of these, the latter is probably due to dyeing the pale grass, and the former tones off into the purple-black of the stipe and may result from its natural range of tint. No difference of texture is distinguishable.

Three weaves have been employed in the creation of this masterpiece. The greater part is in wrapped twining. Three-strand braid or twining marks the transition from bottom to side, and in certain of the ornamental bands a combination of wrapped twining with *tee*, or lattice twining, occurs. The work proceeds from left to right. The number of stitches averages no fewer than six to the



GRASS CUP, LOWER VALLEY OF COLUMBIA RIVER
Haldeman collection, A. N. S. P., No. 12489

centimeter. Owing to the fineness of the weave, and an unusually heavy stitch of the root warp which crosses the center of the bottom, it has been found impossible to determine the manner in which the basket is commenced. Whatever that style may be, certain it is that the wrapped twined weaving makes its appearance as early as in the second series of stitches. The secondary or coil-warp strand,¹ which lies internally to the radiating primary strands, seems of the same root-material as they. The lashing wool is pale straw.

Before reaching the circumference of the bottom, the first decorative motif is introduced—an **H**-shaped figure in black. Short lengths of fern-stem are used for the six figures, the stipe, after making its first turn to the exterior of the fabric to form the left leg of the **H**, is carried along internally to the secondary warp and wrapped with the pale weft element for three stitches, until needed again, then brought to the surface to form the second leg of the figure. Occasionally the thread continues along the back of the coil-warp strand and reappears in the succeeding figure. The pale straw is continuous, even in the circumplexion, wherein occurs the central bar of the **H** figure, for there it backs the coil-warp and so is wrapped with the fern-stem.

The boundary between bottom and side is marked and strengthened by the addition of two strands of the same fiber as the warp, the utilization of the coil-warp as a weft element alternating with the new strands in a three-ply twining or braid—the two being indistinguishable in a finished basket—and the employment of the grass and fern-stem as an overlay embroidery, three threads (one dark and two light) being used to face the fiber, their presence in the interior of the basket being detectable only along the edges of the short stitches of the interior aspect of the three-strand braiding of the fiber. Above this single circumplexion the wrapped twining recommences and continues into the lowest row of the first orna-

¹ As this strand is not of the grass, but of the same fiber as the radial warp, it would seem correct to consider it not as wool but as part of the warp, united by a single weft-strand, in place of the two weft-strands as in the *tee* weave. For this secondary warp element I suggest the name *coil-warp*. This coil-warp is used as a weft in only two places—the boundary line between bottom and side, and in the construction of the selva.

mental band. This black band (fig. 31, *a*) is bisected horizontally by a line of pale straw. Within its divisions, thus formed, a pleasing arrangement of double and single diagonal lines is woven in pale straw. These dip at opposite angles, converging toward the left, and are unevenly spaced, being separated now by one, now by two,

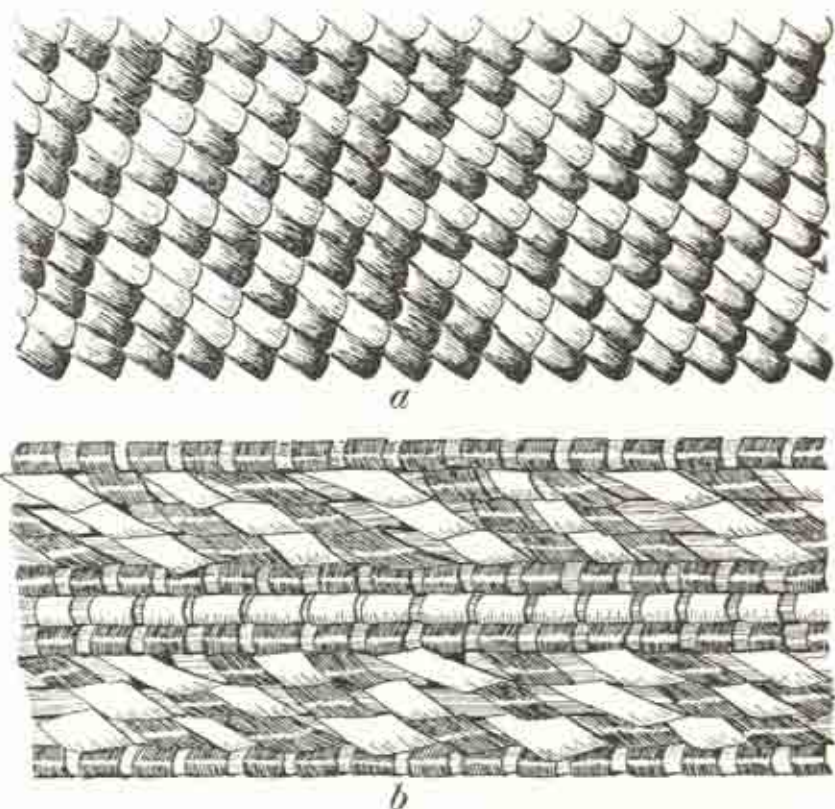


FIG. 31.—(*a*) Exterior and (*b*) interior of ornamental band on basket cup.
(A. N. S. P. no. 11482.)

stitches of fern-stem, but nevertheless corresponding in the upper and lower halves of the band.

The technique whereby these diagonal bars are produced is a combination of bird-cage and lattice-work, and may be best understood by reference to the illustration (fig. 31, *b*). The *tee* stitch is employed where straw and stipe succeed one another; the wrapped

twining is used wherever two consecutive stitches of the same color are desired. The vertical stitches of the latter show but rarely on the interior of the basket, being overlaid by the alternate thread, carried along diagonally to its next outward turn. The inner face of this portion of the band thus presents only slanting stitches in alternate colors and varying lengths. The secondary, or coil-warp, strand is often visible in their interstices, and the basket-wall is perceptibly thickened by the additional lashing. The center and margins of the ornamental band are in the ordinary wrapped twining.

Eight rows above this band, a second series of **H**-shaped figures commences. Their construction does not essentially differ from their homologues on the bottom. Both the red-brown thread of the figure and the pale straw of the pseudo-background, when not in use, are continued under the lashings of the other element, except at the crossbar of the **H**, where the light thread is carried in long stitches over the vertical inner turns of its alternate.

The second ornamental band corresponds in design and weave with the first, but the pale straw is replaced by a light amber and the purplish black by a red-brown tone.

The succeeding light field is broken by a new motif. The first of these figures completed by the textile artist—that lying immediately to the right of the transition line¹ of weave—is a recumbent **I** identical with the upright figure previously described, but this would appear accidental, for, in all of the remaining thirteen individuals, the upper horizontal line has been shortened by one stitch at each end, and the result is **I**. The figure is in red-brown, and is woven in the same way as the **H**.

A third ornamental band, of the same weave and pattern as the bands previously mentioned, begins in red-brown tones, but its central and upper portions are in the lustrous purple-black. The median line and diagonal bars are, like those of the first band, in pale straw. While the general aspect of the design in all three

¹ I am not aware of any designation now in use for this well-marked line from center to circumference, which indicates the completion of each row—a circumplexion—and consequently the transition from one figure to the next.

bands is the same, the second and third lack that close adherence to symmetry in the parts above and below the median line which characterized the earliest example.

Immediately below the selvage, against a pseudo-background of light amber, sixteen little black "dogs" turn their noses to the right and plant their legs upon a single line of fern-stem stitching. These tiny creatures have the simplest outline imaginable. The designations "dog" and "horse" are given by natives to similar creatures on modern baskets, but these might be deemed any quadruped of the Pacific watershed. They are built in the combination wrapped twining and *tee* previously described.

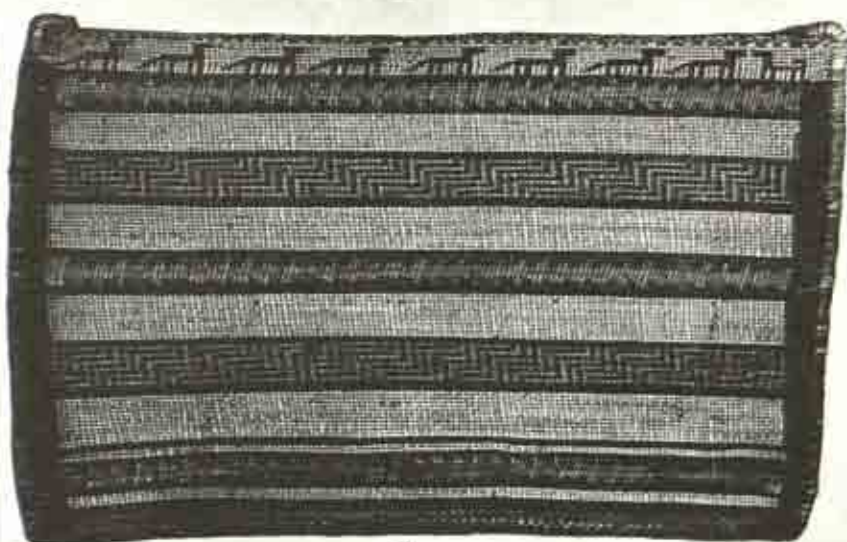
The basket finishes in a selvage produced by a row of two-strand twining of the same substance as the warp fiber, probably in part a continuation of the secondary or coil-warp. The end of each vertical warp-strand is bent outward, then forward and downward, crossing the face of the next warp-strand, whereupon it passes under the two-ply twining, by which it is held down, and penetrates between the warp-threads to the interior, where it is trimmed close. The result is a strong and pretty border of false braid (fig. 32, *a, b*).

This little cup was collected by Thomas Nuttall, the botanist, in his famous trip across the continent in 1834, and given by him to Mr S. S. Haldeman in 1836. On the latter's death it was presented to the Academy. Its tribal affinities will be discussed in connection with the basket wallet, next described.

A fifth basket from the West coast of America, meriting especial attention, is a flat bag or wallet (pl. XX, *a, b*), rectangular in form, and having a length of 405 mm. (*c.* 16 inches) and a depth of 254 mm. (*c.* 10 inches). The greater part is in ordinary two-strand twining of cedar (?) root upon a warp of the same fiber, though in no spot except the first line of sewing at the bottom and the selvage at the top does the material of the basal fabric appear upon the outer surface. I say in greater part, since, in the production of two of the ornamental elements, the textile artist has seen fit to change the technique, substituting a special modification of the bird-cage or wrapped twining for the usual twining; but this will receive consideration under the head of embroidery, since it is the decorative motif that has forced the change.



a



b

BASKET WALLET—A, OBVERSE; B, REVERSE

A. N. S. P., No. 11483

Unlike the Nez Percé basket wallet described by Professor Mason,¹ the vertical warp-strands are not continuous over the lower edge of the basket to form the sides, but appear in two sets, one for each face, held close and bound firmly together by a two-strand twining of cedar (?) root. This twining sometimes passes around a single group of the warp-threads (two strands), again it

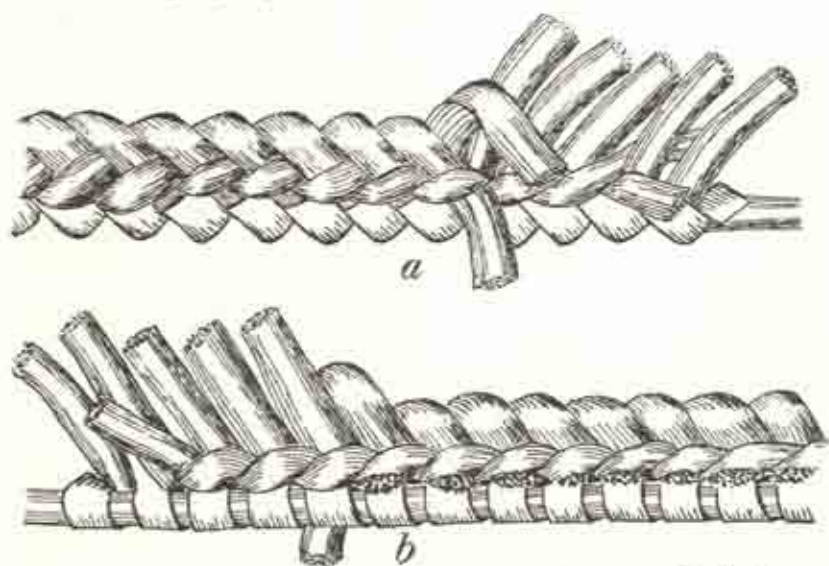


FIG. 32.—Exterior (a) and interior (b) of border on basket cup. (A. N. S. P. no. 11482. Enlarge 1/5 times.)

encloses two groups (four strands), two from each face, but it is always simple twining and does not differ upon the two faces of the basket. The warp-threads, after the completion of the work, have been trimmed close to this strong stitching, which is further enforced by eight rivet-like cords passed through the double weaving just above it and firmly knotted close upon each side. At each extremity of the warp series, and laid parallel with its strands, is a bundle of the same material, about eight-fold the size of the ordinary warp bundle. This is designed to become the lateral selvage of the basket.

The weft, commencing above the fundamental line of stitching,

¹ *Smithsonian Report for 1884*, pt. II, p. 391, pl. XX.

passes from left to right and is overlaid with bark and straw embroidery. Upon reaching the lateral selvage bundle, the woof-strands, together with the embroidery element, encircle the bundle, thus whipping it fast, and the twining recommences on the other face of the basket, but with a changed scheme of ornamentation.

The selvage at the top is preceded by a line of simple twining,¹ almost every stitch of which encloses two of the vertical warp-strands. As this circumplexion is covered by an embroidery of alternating stitches in brown and pale straw, a pretty beaded effect is produced below the braid-like selvage. This latter is an ordinary two-ply twining of cedar (?) root into which are caught the kindred warp-strands, mostly gathered in two-strand groups by the preliminary weft series. The warp bundles, now uniform in texture and thickness with the heavy woof-strands of the border, are turned outward, forward, and downward,—i. e., to the right as seen from the outer surface of the fabric—across the succeeding warp bundle, are caught under the final twining and pass to the interior surface, where the ends are turned down. As the woof-stitches slant upward to the right, and the warp, thus bent upon itself, is inclined to the right, a strong and pleasing border of false braid is produced.

The difficulty of determining the direction of the weave in a basket with the form and facial diversity of this wallet was further enhanced by the perverse turn of the warp-thread. Were the basket woven from right to left, as in the Tlingit berrying basket described above, the woof would have corresponded, in all other respects, with the two-strand twining, and the border presented the appearance of the border type 7 described by Mr Emmons. However, a most careful tracing of individual woof-threads, singled out by some peculiarity, was sufficient to distinguish definitely this border from its analogue among the Tlingit, and conclusively prove

¹ This appears to correspond in every respect with the first line of stitching at the bottom, but owing to the entire concealment of the inner aspect of the former beneath the turned-down ends of the warp, it is impossible to speak with certainty; but the fact that a shorter stitch, spanning a single warp-strand, occasionally intervenes, and that the stitches do not overlap, is all but positive evidence that no three-strand twining is herein concerned.

that the trend of the weave is from left to right, and the slant of the stitch aspiring.¹

The heavy lateral selvage bundles are cut off 38 mm. (*c.* 1½ inches) above the finished basket-top, and each wrapped around with the embroidery element for a finish and bent inward and downward, in a stiff curve, into the corner, where it is held in place by a strong stitch which passes through the weave from one face of the basket to the other, below the selvage, and is carried over the edge to be securely tied.

So old is this piece of native art that its colors have faded to tones of cream and brown. Especially is this true of the obverse, while the reverse, which has been less exposed to the light, retains somewhat of its black and yellow. Fortunately it is possible, by examination of the interior of the basket, to reconstruct its color scheme. There, the projecting bits of straw, carefully turned down, announcing the commencement of an overlay thread, or marking the beginning of a figure, show that the fabric was once radiant in hue—black, chestnut brown (or red?), golden brown, pale straw (or white?), and yellow that lies between a sulphur and a gosling-green.

With the exception of that design and portion of a design to be noted later, the embroidery or overlay is produced by a simple twining of two grass strands overlaying the basal fabric. Hence it presents to the eye a grass stitch with the same dip as the weft-strand which it completely conceals, and by which it is, in turn, concealed on the inner face of the fabric. In one or two instances the two-strand overlay is continuous across a figure and the single stitch in a third tint necessary to the design would seem to be superimposed upon the overlay.

The decorative scheme of the obverse (pl. xx, *a*) begins at the bottom with a band of chestnut brown. A black strand is introduced near the starting point of the first row, to alternate with the brown, but quickly dropped for the uniform tone. It reappears,

¹ Were additional evidence required, it is to be found in the characteristic forward creep of the warp-strands, where the bird-cage weave is used—best seen on the reverse face (pl. xx, *b*) and the crowding of the figures to the right hand on the obverse face (pl. xx, *a*).

however, near the end of the third, and is present across the whole width of the fourth, the final row of the band, giving it a beaded finish. Above this appears the pale, almost white, straw, which, crossed by five triple bands and framed to right and left by a border of brown, is to form the theoretical background for the figures.

The first division of this field contains three shapes, resembling our conventional representation of the feathered end of an arrow-shaft, alternating with two masks. The latter are set so low that the mouths impinge upon the border below. Eyebrows, eyes, nose, and mouth are worked in the pale natural straw, boldly outlined upon the brown surface of the octagonal mask. Horizontal bands of tatting, or paint, cross the face—a series of black stitches, alternating with the lighter brown of the ground tone, extends across the mask at the central line of the mouth; a broad band, solid black in the upper and the lower row and barred within, diagonally upon the right cheek, vertically upon the left, marks the area between the basal line of the nose and the central line of the eye in the left-hand mask, while the face to the right shows between the solid boundaries only a single line of dots (alternating stitches); a double row of alternating black and chestnut-brown (red?) is intersected by the apices of the brows; above this the forehead shows another band, two rows deep, black and reddish strands being twined with the lighter brown in the lower and upper rows respectively to form a chevron pattern.

The other class of figures in this field, as seen in the example in the middle, can be best described as two horizontal rhombs, tending in opposite directions, and placed with their long sides in contact. These are in the lighter brown. The six smaller and vertical rhombs within this figure have been embroidered in the greenish yellow straw. The dark bands of facial decoration upon the masks reappear in corresponding bars across the brown portion of the arrow-feather also.¹ The representatives of this design, to the right

¹ This rhomb symbol is termed, in the present paper, the *arrow-feather*, for the sake of convenience only, not to imply any relation, in the mind of the basket-maker, between the motif and the feathered shaft of an arrow.

and left, have been modified by proximity to the lateral brown borders, the former losing its V-shaped indentation by blending with it, while the latter adds a fourth yellow rhomb to its upper series, and encroaches upon the margin so as to reach even to the selvage bundle.

The lowest field is terminated above by a triple band, dark (alternate brown and black) above and below, and pale straw in the middle line. To this succeeds an unbroken strip of the cream-colored embroidery, and above this is a second triple band, slightly broader than the first and with the central rows in greenish yellow.

Upon the second triple band rest the chins of the five masks of the second occupied field. They differ from the two above described in the possession of an ornamental cap, or head-band, in their greater breadth, and in the tattooing.¹ The row of paint, or tattooing, crossing the median line of the mouth, is in solid black; the band at the basal line of the nose is narrower; the stripe across the forehead commences immediately above the eye and reaches, in its breadth, the apices of the eyebrows. Three rows of stitching higher appears the head-band, vertically barred in cream and chestnut-brown.

Two triple bands, similar to the second and separated by an unbroken field of natural straw, intervene between the second and the third occupied field—a field differing in no way from the former, save in the tattooing (painting) of the masks. Here the lowest horizontal stripe lies between the upper line of the mouth and the base of the nose, and consists of two rows of solid color, bordering one of alternating dark and lighter brown. In the first or left-hand mask a similar band seems to have crossed the face athwart the eyes, but if such a beautification ever existed on the other four masks, it must have been in paler tones, since the corresponding stitches present an even lighter brown than the remainder of

¹ It may be worth while to note that the peculiar type of tattooing practised in western and northern America, a type for which I have suggested the term *kukina* (*Science*, N. S., XIV, p. 776), where a needle with pigment-charged thread is drawn under the outer cuticle, is obviously derived from the textile arts, and can most easily have been suggested by the practice of representing the earlier painted facial decoration in applied stitches upon basketry.

the surrounding surface. The whole of the forehead, from the root of the nose to the ornamental head-band, is occupied by a decoration in alternating stitches.

In all the twelve masks woven upon this remarkable basket, the eyebrows are strongly arched in the form of *M*. From the central depression depends the straight line of the nose. The eyes are hollow squares, sometimes (though that would appear accidental) occupied by a black stitch (the pupil?). The mouth in all of the upper series and in all save the last (the right-hand) of the middle group, is a parallelogram. In the case of the exception noted, only the central two of the four stitches on the base-line of the rectangle are present—an exact reversal of the method of representing the mouth in the first mask of the lowest row, where the upper, not the lower, lip assumes the pseudo-curve. In the other mask of this first row, the four corner stitches in the parallelogram have been omitted and the result is the technical oval. It seems as though the artist had experimented with this feature.

There is one marked peculiarity visible on the obverse face of the basket, that, while every individual figure, and indeed each feature, is created separately by short sections of straw, prominent bands, like the tattoo lines on the masks, reappear in the lateral brown borders. There is no obvious reason for their insertion there, nor indeed for this carrying over into the "arrow-feathering" design of these same bars. Expectancy, familiarity with another and more primitive technique, would appear to have brought this to pass. Either the basket-maker was most familiar with baskets of wrapped twined (bird-cage) weave, where the darker element, when brought to the surface, would inevitably show the black in such a row quite across the whole width of the fabric, or the basket was more or less freely copied from such an one.

Upon the triple band which bounds the third occupied field above, eight little brown "dogs" stand facing to the left. Their anatomy can be best understood by reference to plate XX, *a*. The last dog has apparently been induced, though not compelled, to carry his tail aloft, by the proximity of the lateral brown border. A curious change of weave occurs in the lower row of weft entering

into the bodies of the dogs, and the row immediately preceding it. It is no longer a matter of two-strand twining, overlaid by a two-strand false embroidery, but of three-strand wrapped twined weaving. In this weave a single cedar (?) root weft-strand (i. e., the coil or secondary warp) passes along behind the vertical warp threads, to which it is lashed by two grass strands—one light, one dark. In the upper of these two rows the light grass thread starts off in simple, wrapped twined weaving, with characteristic stitches, diagonal on the right side and vertical on the wrong. After some ten stitches the dark thread is introduced, and the same wrapping is continued with it, the first, or light, binder being carried along on the back quite free until the end of the dog's body is reached, when the light thread is brought to the front, and the process repeated with the dark grass loosely trailed in the rear. The preceding weft series does not present so simple a technique. The spaces between the dogs' legs break the continuity of the dark weave, so that alternating bits of color are desired in parts. Here the dark thread, after its introduction, makes but a single turn on the face of the basket and then gives place to the light strand, which is carried up diagonally at the back across both root wool and warp and brought through to the fore. This lattice weaving continues so long as alternations of the two colors are required, but as soon as the pale field is regained it is replaced by the ordinary bird-cage weave in the light straw, with the brown strand laid free on the inner side of the basket. Above these two rows, the ordinary twined weft and twined overlay recontinue to the selvage.

The reverse face of the basket (pl. XX, *b*) bears scant resemblance to its obverse. True, the creamy straw forms the apparent background here also, the lateral brown borders skirt the selvage bundles, and the procession of little "dogs" crosses the top, but there the likeness ends.

Above the fundamental cedar (?) root stitching, the two-strand twining commences, with two-ply twined overlay in brown. This row is followed by two lines of yellow and brown stitches alternating, and these by two more in yellow and black, and a fifth in yellow and brown. A band of brown with black strands of varying lengths

appearing irregularly in alternating stitches is topped by three rows in pale straw. After two series of solid brown stitches—the commencement of the first ornamental band—the weave changes abruptly. The decoration is a series of yellow triangles, each with its apex in the center of the base of its right-hand neighbor, and to produce this design the basket-maker has resorted to the peculiar combination of the wrapped twining with the twined weave, known as *tee*.¹ Three rows of this interesting adaptation of technique to figure border two lines of ordinary wrapped twined weaving above and below, and then the band is completed by two rows in the



FIG. 33.—Inside aspect of part of the upper ornamental band and border of the basket-wallet. (Reduced.)

usual twining with the two-strand twined overlay in brown (cf. fig. 33).

A narrow band of brown breaks the continuity of the pale straw two rows above the first decorative stripe. The second ornamental band, broader than the first, contains a regular parallel arrangement of step-like lines in brown and yellow. Stitches of black alternating with the brown along the edges and here and there throughout the figure give a twilled effect to the design.

After a short interval a third ornamental band has been woven in similarly to the first, in the substituted combination weave. It is, however, broader, and its triangles point to the left. The motif of the second decorated band recurs in the fourth, while the fifth corresponds with the third. A peculiarity of the three ornamental bands with the triangular motif is the rectangle upon which the apex of the foremost triangle impinges. This is obviously an essential part of the design, since it occurs at the end of the lower

¹ The horizontal strand, or coil-warp, in the fabric here considered, as well as in the basket-cup described above, lies behind the warp-threads, not before them, as with the Pomo creations.

series, which points to the right, and at the starting of the middle and upper series which are directed to the left in all cases there was sufficient space to weave another triangle.

The procession of little "dogs," standing upon this last band, all face to the right, except the last to be completed. This remarkably lean individual, with tail in air, confronts the foremost of the advancing line. These little animals are not so realistic as those upon the obverse. The four rows of stitches which enter into their stick-like legs are in the combined wrapped twined and *tee* weaves (fig. 32). The regular two-strand twining with two-strand twined false embroidery recommences in the body and continues to the selvage.

The form of this basket-bag or wallet plainly shows its relationship to the flat skin pouch, from which it would appear to have been derived. Mr Teit has described bags of this shape from the Thompson River Indians (Salishan stock) which are of an even more primitive type, being made from a piece of matting, folded over, and sewed up at both sides with a piece of deerskin.¹ The wallet accredited to the Nez Percés, and figured by Professor Mason, gives a further step in the evolution of this form. There, the warp-strands of the sides are continuous across the lower edge of the bag, just as in the Thompson mat-pouch, but the weaving commences at its bottom in the center of the warp-threads, and after these have been firmly tied together and bent upward, the twining proceeds round and round the fabric.

In the bag herein described it is difficult to tell whether the change is an improvement or the reverse. The advantages of the strong, continuous warp over the parallel structure with the rough ends trimmed close to the twining are, perhaps, more than balanced by the additional stay of the rivet-like cords, and a freedom from the danger of breakage due to the sharp bend of the warp-strands.

This type of flat basket, so little adapted in form to primitive household needs, does not seem, despite its simplicity of outline, to be widely distributed. It could have come into vogue only as the

¹ James Teit, *The Thompson Indians of British Columbia*, *Memoirs of the American Museum of Natural History*, vol. 11, p. 201, fig. 149.

successor of the skin receptacle, and at such points where skins were more difficult to obtain than the vegetable fibers, so cunningly and laboriously wrought into its structure.

It would appear to be most frequent among tribes of Salishan and Shahaptian stocks. As noted above, the Thompson River Indian basket-wallet is a modified mat, and another Salishan tribe, the Quinaielt, weave their wallets with a horizontal warp and vertical weft,¹ thus showing, in yet another way, the relationship of this form to the mat and earlier skin bag. The Shahaptian wallet is built upon quite another principle, the basket being commenced in the middle of the line of warp-threads, continuous over both faces of the basket, whereafter it is woven round in the usual way.² The one here described is, I believe, peculiar in its structure—the treatment of the trimmed and riveted bottom, and the lateral selvage bundles, both of which characters tend to reduce its capacity and general usefulness. The lateral selvage has the appearance of copying in textile the leather binding of such a wallet as the Thompson Indians construct.

In its weave it is also unusual: the two-strand twining whereby the greater part is built up is of wide distribution, but the treatment of the overlay is not that of the Salishan tribes, which possess wallets resembling this. The Thompson Indians wrap the decorative filaments about both elements of the twine, thus revealing the design upon the interior.³ On the other hand, the Shahaptian Nez Percés do not carry the embroidery thread to the interior, but pass it beneath the exterior aspect of the weft-stitch.⁴ In the Academy's basket, however, the decorative element, while not appearing on the interior, save as free ends marking the beginning and completion of a figure, yet passes the stitch behind the vertical warp-strands but is concealed by the stitch of the fabric along which it lies.

Of the other weaves that enter into this basket, the wrapped

¹ Mason in *Ann. Rep. Smithsonian Inst.*, 1902, U. S. N. M., pp. 264 and 435.

² *Ibid.*, pp. 437-438.

³ *Ibid.*, p. 325, pl. 78, figs. 1-4.

⁴ *Ibid.*, p. 438 and fig. 130.

twining is a technique of limited distribution, being known only from Washington and the ocean side of Vancouver Island, among the Wakashan, Salishan, and Shahaptian peoples.¹ The *tee*, or lattice-twined, weave, is yet more circumscribed, having been reported only from the Pomo Indians of California. A characteristic of the Pomo *tee* weave is the location of the horizontal or coil-warp in front of the vertical or radial warp,² while in the wallet and the cup here described it lies on the interior of the basket. As this is a trait of the wrapped twined weaving which builds up the major part of the cup and certain bands of the wallet, the relative positions of the two warp elements have been conditioned by the latter weave. In fact, the lattice weave may be regarded, in this instance, as evolved out of the wrapped twined weave by the action of decorative necessities.

The type of border exhibited by this basket, I have nowhere seen figured or described. It has a certain affinity to that of the Quinaielt wallet collected by Mr C. C. Willoughby and described by Professor Mason,³ but it is not identical, the direction of the weave being reversed, and the warp-strand bent *forward* (not backward) *in front* of its neighbor (not behind), *under* (not over) the stitch of the two-strand twining, before turning inward. This border will be seen to be identical with that of the cylindrical basket cup described above, with the exception that, in the latter, the warp-straunds are used singly, while in the former they are usually grouped in pairs and treated as a unit.

Turning to the designs represented on the wallet, the "arrow-feather" figure may be considered as a possible variant of the ornamental bands upon the cup. The faces or masks are characteristic Chinookan in presentation,⁴ though they differ somewhat from those shown on Wasco baskets, the eyes being placed horizontally, not diamond-wise.⁵ The horizontal bands of triangles upon the reverse face of the wallet occur as a motif, but placed

¹ Mason in *Ann. Rep. Smithsonian Inst.*, 1902, U. S. N. M., pp. 235-236.

² *Ibid.*, p. 237.

³ *Ibid.*, p. 264.

⁴ *Ibid.*, p. 439, pls. 168, 169.

⁵ The University of Pennsylvania possesses, I believe, a Nez Percé wallet covered with octagonal faces, but I have not been able to examine it.

vertically, on Salishan and Shahaptian basketry,¹ as upon that of certain unrelated California tribes. The two bands of parallel stepped lines suggest the shaman's hat pattern of the Tlinkit. Simple as is the motif, and frequent of occurrence, upon the basketry of other people, it is almost invariably presented in aspiring series. The little animals that trail around the top of this wallet, and of the cup also, are characteristic of the textile art of the Skokomish and other Salishan tribes, as the Clallam and the Quinalt.² The design is also known to the Klikitat, a Chinookan tribe formerly living near the Dalles of the Columbia.³

It will thus be seen that, in peculiarities of weave and of border, the basket wallet and cup agree, as also in the arrangement of the decoration in horizontal bands, and partly in the motives employed. There can be little question that they emanate from the same tribe. The cup is recorded as from the Pacific coast; the wallet has long been without data. It was formerly assigned to the Pacific islands and placed with Hawaiian ethnographica. This, and the silence of the old accession lists regarding its acquisition by the Academy, would seem to indicate the probability that it came with the Nuttall and Townsend collections. Owing to the several voyages of Nuttall and Townsend between the mouth of Columbia river and the Hawaiian islands, and thence around the Horn, some specimens of their collecting have been found erroneously assigned, which makes even greater the probability that the wallet was also part of the treasure trove of this expedition.

The travels of these scientific explorers were confined, in the West, to the valley of the Columbia, with brief trips into its tributaries and along the contiguous coast; there they met with natives of the Wallawalla, Nez Percé, Chinook, Klikitat, Kallapooyah, Cowlitz, and Cayuse tribes.⁴ It was with the Chinook, however, that they were longest and most intimately associated.

¹ Mason in *Ann. Rep. Smithsonian Inst.*, 1902, U. S. N. M., p. 324, pl. 76; p. 438, pl. 161.

² *Ibid.*, p. 438, pls. 51, 162, 164, 165.

³ The American Museum of Natural History possesses a Klikitat basket bearing this design (no. 13112), collected by Dr Livingston Farrand in 1900.

⁴ John K. Townsend, *Narrative of a Journey across the Rocky Mountains to the Columbia River, and a Visit to the Sandwich Islands, Chili, etc.*, 1839.

It is evident that, in the textile art, Chinookan, Salishan, and Shahaptian peoples have shared with one another, and from present knowledge it is impossible to assign the basket wallet and cup to any given tribe. They are, in a sense, *sui generis*, and yet essentially a product of the lower Columbia valley.

THE ACADEMY OF NATURAL SCIENCES
PHILADELPHIA, PENNSYLVANIA

NOTES ON THE ANCIENT ART OF CENTRAL AMERICA

By GEORGE GRANT MACCURDY

WHILE I was attending the centenary celebration of The Academy of Natural Sciences of Philadelphia, Miss H. Newell Wardle of the Academy's museum staff called my attention to a small stone amulet (fig. 34), she having already noted



FIG. 34.—Stone amulet formerly used by the Indians of Talamanca, Costa Rica. (†)

its similarity to certain specimens illustrated in my recent work on Chiriqui.¹ This amulet, number 4433 in the Academy's ethnological catalogue, was collected by a former member, Mr William M. Gabb, whose widow presented it to the Academy in 1879.

The item accompanying the specimen and signed by Gabb is as follows: "Formerly used by the Indians of Talamanca as an ornament (or necklace) and also as money. The art of making these now seems to be lost." The figurine is carved from a stone of rare and attractive color, cut so as to reveal white and red coralline bands. The hardness is 4 and the specific gravity 2.55. The acid test reveals the presence of calcite. The material is considered by Professor William E. Ford to be an impure limestone.

The Indians of Talamanca occupy southeastern Costa Rica and the territory to the eastward as far as Almirante bay. The principal tribes are the Bribri, the Cabecar, the Uren, and the Tiribi. From which of these tribes the specimen in question was collected Gabb does not say. It is of special interest as being a good example of a figure in one medium being executed in a technique that belongs to another medium. In other words, the artist

¹ A Study of Chiriquian Antiquities, *Mem. Conn. Acad. Arts and Sci.*, vol. 411, 1917.

working in stone has borrowed the technique of the goldsmith. This is seen in the flattened feet which give the effect of having been hammered; also in the conventionalized alligator heads attached to the head of the frog. The transverse perforation through the neck is not visible in the dorsal view.

An example of the metallic type of frog carved in resin, from Divala, Chiriqui, was figured in my volume previously cited. Unfortunately the flattened feet are broken away (fig. 35). There is a ring for suspension under the throat. This specimen also served as a neck ornament, and, like the stone figurine collected by Gabb, may have been used in lieu of the more precious figurines of gold.

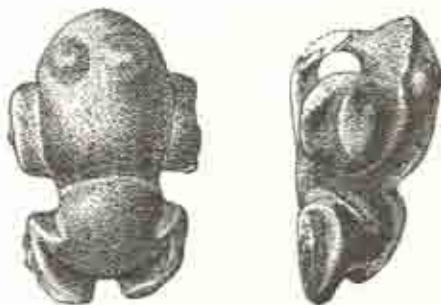


FIG. 35.—Figure of a frog carved in resin; from Divala, Chiriqui. Lamson collection. (1)



FIG. 36.—Base metal casting of a frog; the head is adorned with two conventionalized alligator heads. Lamson collection. (1)

The use of the conventionalized alligator and alligator head as a decorative and symbolic motive, particularly on metal figurines, was quite common in ancient Chiriqui as well as in Costa Rica. An example resembling the specimen belonging to the Philadelphia Academy but made of base metal is in the William J. Lamson collection of Summit, New Jersey. In the latter the conventionalized alligator heads are rendered more easily recognizable by the presence of the teeth and eye as well as the recurved jaws (fig. 36).

The head and body of the alligator are sometimes employed in place of the head alone. An example is to be seen in a gold figurine belonging to the Metropolitan Museum of Art, New York City (fig. 37). Here the figure as a whole is an alligator; its

four feet are replaced by alligator heads and out of its mouth protrude two conventionalized alligators armed with prominent dorsal spines.

The favorite metallic type of alligator symbol consists of two heads united by a common body. In such cases the common body, as well as the fore legs, is often undifferentiated, being left as a plain flattened bar attached to the head, or both head and feet, of some deity. This is well illustrated in a parrot-god and two jaguar-gods, all belonging to the Minor C. Keith collection. In

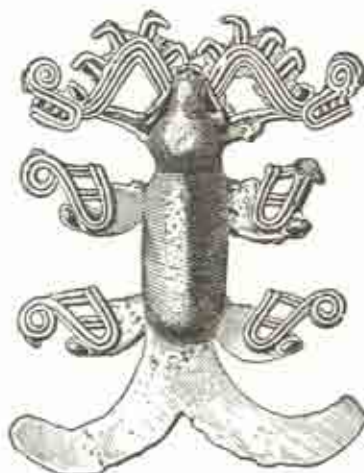


FIG. 37.—Gold figurine ornamented with alligator motives. Metropolitan Museum, New York. (1)



FIG. 38.—Gold figurine representing the jaguar-god with an alligator motive serving as headdress; from Rio General, Costa Rica. Keith collection. (1)

figure 38 it is quite evident that the bar and its curved extensions represent the multiple alligator motive. The dorsal spines on the common body are placed ventrally for technical reasons. In figure 39 the motives at both head and feet are plain flattened bars undifferentiated except for a row of triangular perforations representing the dorsal markings of the alligator.

That isolated examples of the ancient art of Chiriqui and southern Costa Rica should be found among the modern tribes of that region is not surprising. In his paper "On the Indian Tribes

and Languages of Costa Rica"¹ Gabb says that the Talamanca "chiefs on great occasions wear gold ornaments, similar to those now found in the *huacas*, or graves of Chiriqui. Whether these have been recovered from some of these graves, or whether they have been handed down from time immemorial is not known." This is no doubt also true of the stone figurine collected by Gabb and now in the museum of The Academy of Natural Sciences of Philadelphia.

With the Lamborn collection there came to the Philadelphia Academy in 1900 a small Chiriquian collection which includes a diminutive clay metate or seat (cat. no. 3928). This specimen, which belongs to the plain terra-cotta or *armadillo* ware, is without ornament of any kind. It is only about ten centimeters long; in shape it corresponds rather closely to the stone metate² of moderate size given to the Yale University Museum by Mr Edwin Lamson, of Summit, New Jersey. Instead of the customary four legs, each is provided with a pair of parallel continuous supports extending nearly the full length of the plate or seat. This type forms a connecting link between metates on the one hand and stools on the other.

Stone of suitable quality and attractive appearance has always been a favorite material out of which to fashion amulets and ornaments. Resin is a medium much less frequently employed. Al-

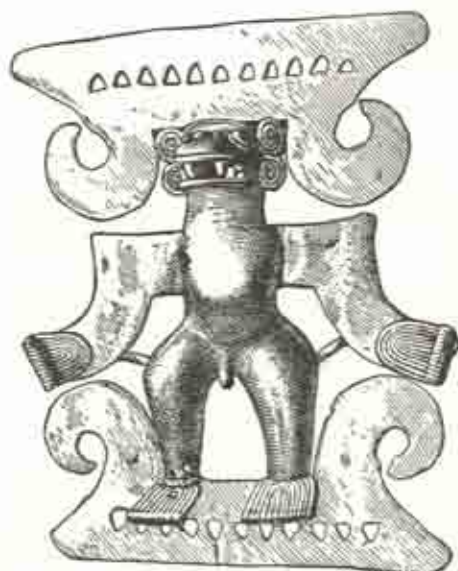


FIG. 39. — Gold image of the jaguar-god. The perforated bars at the head and feet are alligator motives; from the Huacal de los Reyes, Rio General, Costa Rica. Keith collection. (§)

¹ *Proc. Amer. Philos. Soc.*, vol. xiv, pp. 483-602, 1875.

² *Op. cit.*, fig. 21.

though easily worked and of an attractive color, these qualities are more than offset by its rarity and friability. For even more cogent reasons one would not expect to find ornaments made of

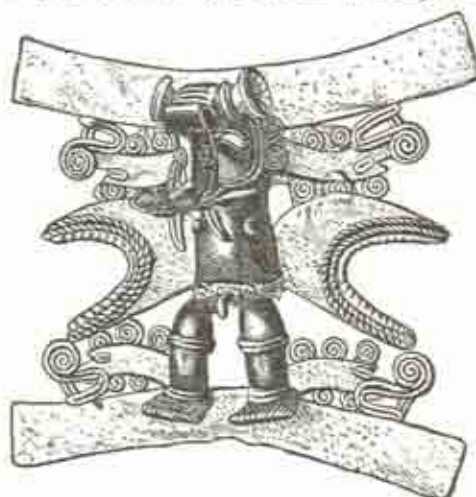


FIG. 40.—Gold image of the parrot-god with alligator motives at the head and feet. Keith collection. (3)

clay. Where such do occur, however, one might expect to find them in the guise of ornaments in some other more appropriate medium.

Recently Professor Jorge Engerrand of the Instituto Geológico de México called my attention to the remarkable similarity between a prehistoric clay plaque or gorger from Venezuela described by G. Marciano,¹ and a Chiriquian gold plaque from the George G. Heye collection.²

The repoussé ornamentation of the clay plaque (fig. 41,



FIG. 41.—Clay plaque from Venezuela. After G. Marciano.

¹ *Ethnographie précolombienne du Venezuela, Mém. Soc. d'Anthrop. de Paris*, 2^e sér., t. IV, 1893.

² *Op. cit.*, fig. 379.

a, b) consists of four large embossments (instead of five), with a single circle (instead of two) of raised points surrounding these and near the margin. The two holes for suspension coincide with this circle. The resemblance between the clay plaque and the one of



FIG. 42.—Gold plaque from Chiriquí, Panama. Heye collection. (1)

gold (fig. 42) is so pronounced as perhaps to justify the assumption of a genetic relationship and of the replacement of one by the other as the exigencies of the case might demand. In like manner may the stone and the resin figurine each be looked upon as a substitute for gold figurines which they are made to resemble so closely.

YALE UNIVERSITY MUSEUM
NEW HAVEN, CONNECTICUT

THE CREEK INDIANS AS MOUND BUILDERS

By JOHN R. SWANTON

NEAR the southern edge of the old Creek Nation, Oklahoma, five or six miles from Indianola and between that point and Eufaula, is an earthwork which has all the marks of considerable antiquity. It lies upon high ground a few miles distant from Mill creek. A narrow lane divides it near the middle, leaving part in a cotton field and part in a strip of woods now owned by an Indian named Choctaw Given. The principal feature of this work is an oval ridge, now a foot to a foot and a half high, in the timber, readily traceable across the lane, and still discernible throughout most of its course in the cultivated field, its entire circuit being about 750 feet. Within this oval, at the end now covered by woods, is a mound about ten feet in diameter and three feet high, but there are no other well-marked mounds, although some artificial inequalities are still discernible in the cotton-field. At one point in its periphery the oval ridge is broken and a circular space about twenty-eight feet in diameter can be made out cutting through it. Nearby are a number of small pits, three to four feet across and a foot or two deep. Within and upon the earthen ridge are a number of trees, principally post oak, twelve to eighteen inches in diameter, while one giant oak entirely within the enclosure measures at least four feet through.¹

Two or three miles west of this work, on the side of a hill above a notable spring known as Kealedji spring, is an earthwork of similar character. The oval, 650 feet in circuit, can be plainly traced, although more than half is now covered by yards for cattle and hogs, separated by worm fences and belonging to a farmhouse close by. An elderly woman who had lived upon this farm for a year knew nothing about the earthwork in question. Two or three

¹ On my second visit to this place, in May, 1912, I found that this tree had fallen.

ovals, similar in character, are said to be scattered through the same region, but I did not see any of them. From the archeological point of view this is about all there is to be said about these oval works, and whether they were for ceremonial, mortuary, or defensive purposes, on that ground alone it would be impossible to say.

Now, as a matter of fact, we know the history of the works described, for what they were used, and approximately how long it took to form them.

They were the busk-grounds first regularly occupied by the Creek Indians when they moved into this country from Alabama, the one first described being that used by the Tukabatchi and the second that of the Kealedji, while the unvisited ovals were the busk-grounds of the Enfaula, Atasi, and other branches of the Creek Indians. The Tukabatchi mounds were made between the time of the removal of the Creeks (1836-1840) and 1871, and those of the Kealedji during approximately the same period.

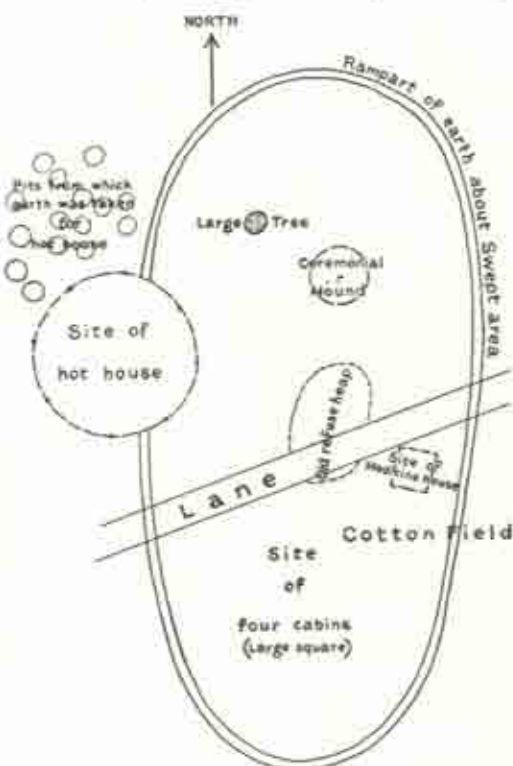


FIG. 43.—Site of old Tukabatchi busk-ground.

Fig. 43 gives an idea of the general arrangement of the Tukabatchi ground as still traceable and as explained by a man who had seen it when in use. North of the lane, which runs over one end of an old refuse heap and close to the site of the medicine-house, where the sacred vessels and shields were kept, is the big tree and the good-sized mound referred to above. This latter was

used in the war dances and other ceremonial performances, and in the old country it was surmounted by a ceremonial ball-post, the "chunk-post" of earlier writers, but for some reason or other no post was placed upon this mound nor upon the ceremonial mound in the present busk-ground of the Tukabatchi. On the old Kealedji ground (fig. 44) a very large circular rise (on the line of the wire fence) is all that is left of this mound, which was probably actually surmounted by a post in this case. The circular space referred to as cutting the Tukabatchi oval (fig. 43) is now seen to be the site of the old "hothouse," and the pits near it the places from which earth was taken to cover its roof. The four cabins were principally south of the lane in the cotton-field.¹ At the Kealedji site (fig. 44) little more can be made out except the site of the fire in an angle of the worm fences. At the northern end, where it has been little disturbed, the oval ridge is even higher than that of Tukabatchi. On account of their method of formation these oval ridges surrounding the busk-grounds are of peculiar interest to the archeologist, and deserve special consideration. In any recently established ground of this kind among the Creeks and Seminole such a ridge is wanting, while in those which have been occupied for a number of years, such as Nuyaka, there is a distinct ridge of the same character, though much lower, perhaps from four to six inches high. The explanation of this difference is as follows: The area of a Creek busk-ground, occupied by the four cabins (*teuka lago*, "big house") and the ceremonial ball-post, is called the "swept area" because it must be swept off every year before and during the annual busk and also before each of the three "stomp dances" that precede it. In Tukabatchi it would seem that this area is cleaned off about nine times every year. The sweepings of any one year, however, especially now that the old customs have fallen into abeyance, are not very great, but in the course of several seasons a slight ridge makes its appearance around the edge of the "swept area," and this ridge is steadily, if slowly, increased. If the same ground is used for very many years, however, the ridge becomes quite formidable in size and we have the condition presented

¹ Subsequently I learned that they were where the lane now is.

at old Tukabatchi and old Kealedji. It should be added that the area of the four cabins is either swept oftener or a little more thoroughly than the rest of the area, so that some towns show an inner ridge surrounding them. Besides this a small mound of earth is frequently used nowadays to represent the old "hothouse", and another is a kind of women's headquarters, where the women form before dancing into the big square. Other mounds are formed accidentally around trees or other obstructions, the refuse piling up against them instead of being swept past. The area is by no means entirely freed of trees, as is to be observed in a number of grounds occupied at the present time, and the big oak tree within the Tukabatchi oval was always there. Some of the others at the same place may have taken root before the ground was abandoned.

A certain type of earthwork is thus shown to be of Creek origin, and this type should be kept in mind by archeologists working in Alabama and southern Georgia. At the same time

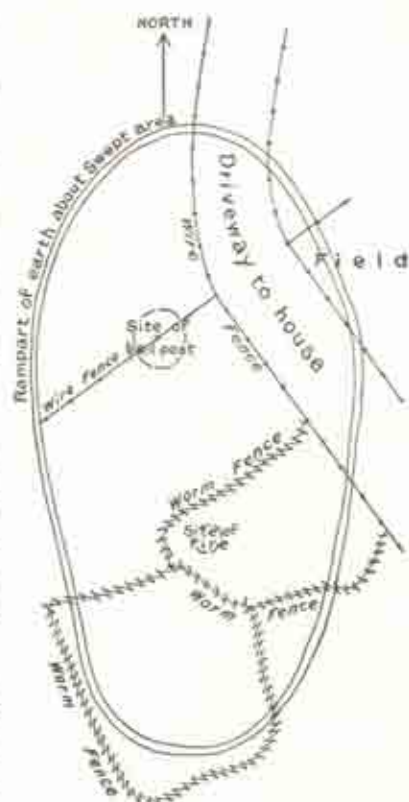
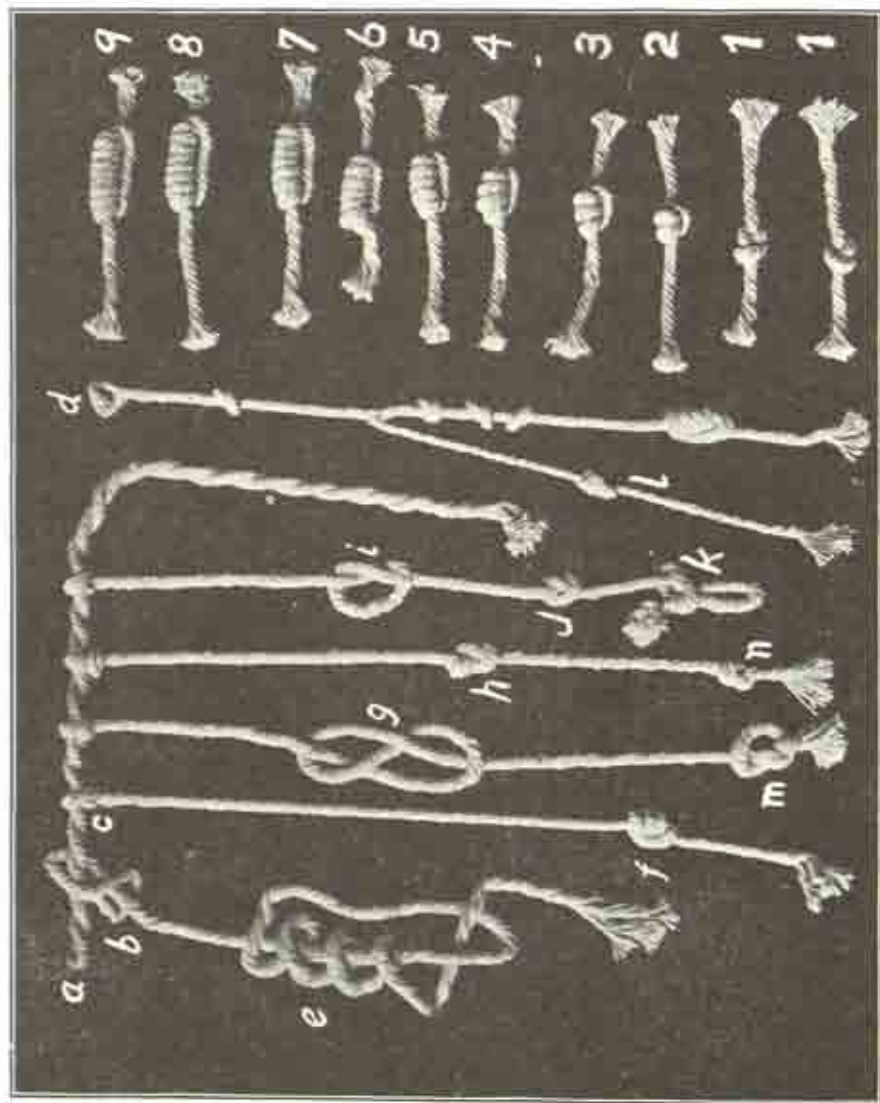


FIG. 44.—Site of old Kealedji bush-ground.

it should be remembered that the earthen ridge is in the nature of an "accident" resulting from a certain custom. We may say that it is not the "fill" but the "cut" that is of importance to the Creeks, and they might and probably did level the ridges if they became uncomfortably high. Conscious mound-building does occur, however, in the mound for the ball-post or the ceremonial dances, and, going farther back, William Bartram informs us that anciently the ballground, or "chunk-yard" as he terms it, was between the "big

house" and the "hothouse," and that each of these latter was placed upon an artificial mound. From these facts it appears that the claim of the Indians of the Creek Confederacy as mound-builders can not altogether be denied, the proofs extending down by regular continuity to the present time and backward to greater and greater works in the remote past.

BUREAU OF AMERICAN ETHNOLOGY
WASHINGTON, D. C.



MODE OF TYING THE KNOTS

a) main code, λ_i from the number $H(\text{code})_{\text{main}}$; f_i the same; m_i , L_i , C_i known for all.

THE ANCIENT QUIPU, A PERUVIAN KNOT RECORD

By L. LELAND LOCKE

INTRODUCTORY NOTE

The following article by Mr Locke appears to be a genuine contribution to our knowledge of the quipu, and to make it quite certain that the knotted cords were used simply as numerical records, and not, as is often supposed, for narrative purposes. Mr Locke shows clearly that he is able to read the various authentic specimens, since his interpretation admits of a definite check. It would seem, therefore, that we have here the earliest known decimal notation of the Western World, at any rate the earliest that admitted of easy transportation. The publication of such an article will be of interest to archeologists as well as to those who work in the domain of the history of mathematics. For the latter, the quipu forms a chapter in the extensive history of the abacus, a topic that has never yet been worthily treated but one that Mr Locke is beginning to investigate.

DAVID EUGENE SMITH,
Columbia University.

THE use of knots in cord for the purpose of reckoning and recording number seems to have been as universal as the figures of the cat's cradle¹ in the play life of primitive peoples. Both may be said to be indigenous to all lands in which the arts of spinning, weaving, and dyeing have been cultivated. In two noteworthy cases tradition makes the knotted cord serve as letters. In China² knot records are said to have preceded the knowledge of writing.

In more recent times the most remarkable development of knot records took place among the Incas of Peru. Here is found the anomaly of a people with a highly complex civilization, particularly in governmental machinery, with a wealth of tradition, and with a peculiarly rich and expressive language, but with no system of

¹ Jayné, Caroline Furness, *String Figures*, New York, 1906.

² Carns, *Tao-Teh-King*, English edition, p. 137; Goguet, *De l'Origine des Loix*, etc., 1758, vol. III, pp. 171, 312; De Mailla, *Hist. Gen. de la Chine*, vol. 1, p. 4; Martini, *Hist. de la Chine*, vol. 1, p. 21; *Jour. Ethn. Soc.*, London, 1870, pp. 5, 13; *Nature*, 1876, vol. II, p. 405.

writing,¹ either hieroglyphic or phonetic. A very important question concerning the culture of the Incas is to determine to what extent knot records took the place of writing. Nearly all writers on Peruvian history and archeology, during and since the Conquest, have detailed, at more or less length, the practice of using knotted strings, or *quipus*,² not only for numerical records but for the preservation and transmission of royal orders, orations, poems, traditions, and historical data.³

The most reliable information given by one who actually understood⁴ and used the quipu is to be found in the works, cited above, of Garcilasso de la Vega. The writer was born at the Inca capital, Cuzco, in 1539. He was the son of a Spanish cavalier of the same name, and his mother was the Inca princess, Chima Oello, a niece of the Inca Huayna Capac. The young Inca spent the first twenty years of his life among his mother's people, imbibing their culture and traditions.

There are five sources upon which a comparative study of the quipu may be based:

1. A compilation⁵ of statements from Spanish sources following the Conquest.

¹ *Commentarios Reales, por el Inca Garcilasso de la Vega*, Madrid, 1723, vol. I, VI, chapters 8-9, pp. 181 et seq. Vol. II is entitled *Historia General del Peru*, Madrid, 1724. References to Vega in this paper are uniformly to this edition. Tradition says that in the reign of Huancacauri Pirua, the third of the old kings of Peru in the list of Montesinos, the use of letters was known and the art of writing on plantain leaves, and that the eighty-first king, Tupac Cauri Pachacuti, prohibited the use of plantain parchment and introduced knotted strings.

² The word *quipu* in the so-called Quichua language means "knot", and those in charge of the records were called *quipucamayaz*.

³ Vega, I, chapters 8-9, II, 25, p. 29; Polo de Ondegardo, Corregidor of Cuzco in 1560, *Relaciones*, MS., quoted by Prescott, *Conquest of Peru*, I, p. 123; Cristoval Vaca de Castro, *Discurso*, p. 5, quoted by Bandelier, *Islands of Titicaca*, p. 332.

⁴ Yo traté los Quipus, y ándos con los Indios de mi Padre, y con otros Curacas, quando por San Juan, y Navidad venían á la Ciudad, á pagar sus tributos. Los Curacas agenos rogavan á mi Madre, que me mandase les cotejase sus Cuentas; porque como gente sospechosa, no se fiavan de los Españoles, que les tratasen Verdad en aquel particular, hasta que yo les certificava della, leiendoles los trasiaños, que de sus Tributos me tralan, y cotejaníolos con sus ándos; y desta manera supe dello tanto como los ándos.—Vega, I, VI, p. 183.

⁵ The writer is completing a bibliography of the quipu and such a compilation. He wishes to express his appreciation for much help and suggestion generously given by Mr A. F. Bandelier.



QUIPU, OR PERUVIAN KNOT-RECORD

The number of pendent cords (93) is indicated by knots on the ends of the main cord. B 8705 American Museum of Natural History. Scale 1.

2. Drawings of supposed quipu. Some of these are without question apocryphal, while those that are genuine are drawn with little attention to the details which are necessary to a satisfactory study.

3. Specimens of ancient quipus exhumed from Peruvian graves and now in the collections of various museums.¹

4. Specimens of present day quipu.²

5. A compilation of statements of explorers and ethnologists from the time of the Conquest to the present relative to the continued use of the quipu.

The characteristics of the ancient quipus, both as described by the Spanish writers and exemplified in extant specimens, are:

1. A main cord varying in length from a few centimeters to a meter or more.

2. Attached to the main cord are pendent cords seldom exceeding 0.5 meter in length. These vary in number from one or two to a hundred or more in existing specimens. The manner of forming the cords is to spin a cord of twice the length desired, then double it with a loop at one end as seen in pl. XXI, *b*, and twist the two strands together. Usually a knot is tied at the end of the cord, and in most cases the cord tapers off at the end, indicating the running out of the material in spinning. Both cotton and wool were used, natural white and buff being available in both materials.

The pendent strands are attached to the main cord by passing the free end over the main cord and through the loop formed by doubling and then drawing it taut. See pl. XXI, *b*, *c*. They are variously distributed along the main cord, sometimes with short spaces between the groups, and in other cases placed close together.

3. Knots are tied in the pendent cords at varying distances

¹ The American Museum of Natural History in New York City possesses a very extensive collection from the Peruvian expedition conducted by Mr. Bandelier during the ten years following 1892. Through the courtesy of Mr. C. W. Mead the writer has been furnished abundant facilities for making a detailed study of this collection.

² Cf. Bastian, *Ethnologisches Notizblatt*, 1895. Uhle in *Bulletin of the Free Museum, University of Pennsylvania*, 1897.

from the main cord. These groups of knots are arranged roughly in rows across the quipu. (See pl. XXIV, and compare with Vega, I, vi, 8-9, p. 181 et seq.)

4. In nearly all of the ancient quipu short subsidiary cords are attached to the pendent strands, upon which are indicated numbers that disturb the main count of the quipu.¹ The mode of attaching is seen in pl. XXI, *l*. The subsidiary cord is not found in the specimen discussed in this paper, except that there is an indication of such attaching in cord *b4*, pl. XXIII, where there is a discrepancy in the count of the cord.

5. Character of the knots. Plate XXI shows the forms of the knots and the mode of tying which exist in specimens studied. The single or overhand knot (*i, j*), indicates 1 if it is in the row farthest from the main cord, 10 if it occurs in the next row, 100 in the next row, etc. Not more than nine single knots are found in one group, the number system being strictly decimal.

The long knot, used to express the repetition of units of the same order in place of a cluster of single knots, was likened by Mr Frank H. Cushing to the appearance of the closed fist. (See pl. XXI.) It is formed by tying the overhand knot and passing the end through the loop of the knot as many times as there are units to be denoted. (See pl. XXI, *e, f*.) One end is then drawn taut, thus coiling the other about it the required number of times. There seems to have been no fixed practice as to which end is drawn taut, the upper fixed end, or the lower pendent end. As this would lower or raise the knot on the cord, it is possible that the device was used to keep the knots of one order relatively the same distance from the main cord. The loop has apparently no numerical significance, but from the manner of its appearance on the specimens examined it may have had some such use as the red line used by bookkeepers in closing an account.

¹ Algunos de estos hilos tenían otros hilitos delgados del mismo color, como hijueías, ó excepciones de aquellas reglas generales, como digamos en el hilo de los hombres, ó mugeres de tal edad, que se entendían ser casados, los hilitos significaban el número de los Viulos, ó Viudas, que de aquella edad avía aquel Año.—Vega, I, vi, 8, p. 181. Cf. Bastian, loc. cit., and Uhle, loc. cit.

The following problems are presented by the Spanish accounts of the quipu:

1. Was the quipu used to record historical events, other than dates and numerical data?

2. Were the knots, mode of tying, grouping, color of cord, twisting of the strand, and distances used to convey ideas?¹ Or were they used merely as *memoria technica*, without any individual significance, as is the case with the beads of the rosary?

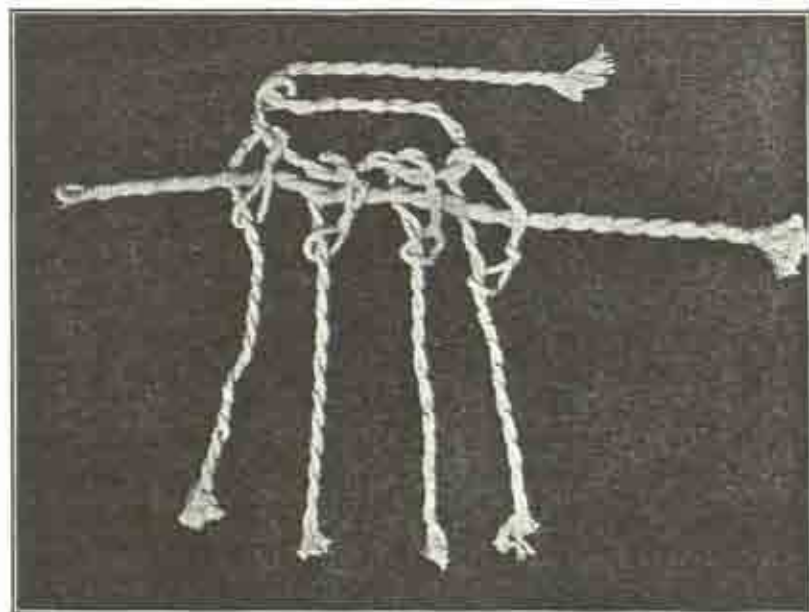


FIG. 45.—Manner of grouping the pendent cords and of attaching the top cord.

3. What was the significance of color? It is well known that there was a system of using roughly suggestive colors, as red for war, yellow for gold, etc.²

4. What is the significance of grouping; of distances between the knots and from the main cord; and, finally, of the individual knot?

It is the purpose of this paper to present a study of a represen-

¹ *Tenth Annual Report of the Bureau of Ethnology*, 1888-89, p. 369.

² Cf. Bastian, *loc. cit.*, and Uhle, *loc. cit.*, and also Bastian, *Die Culturländer des alten America*, III, p. 74.

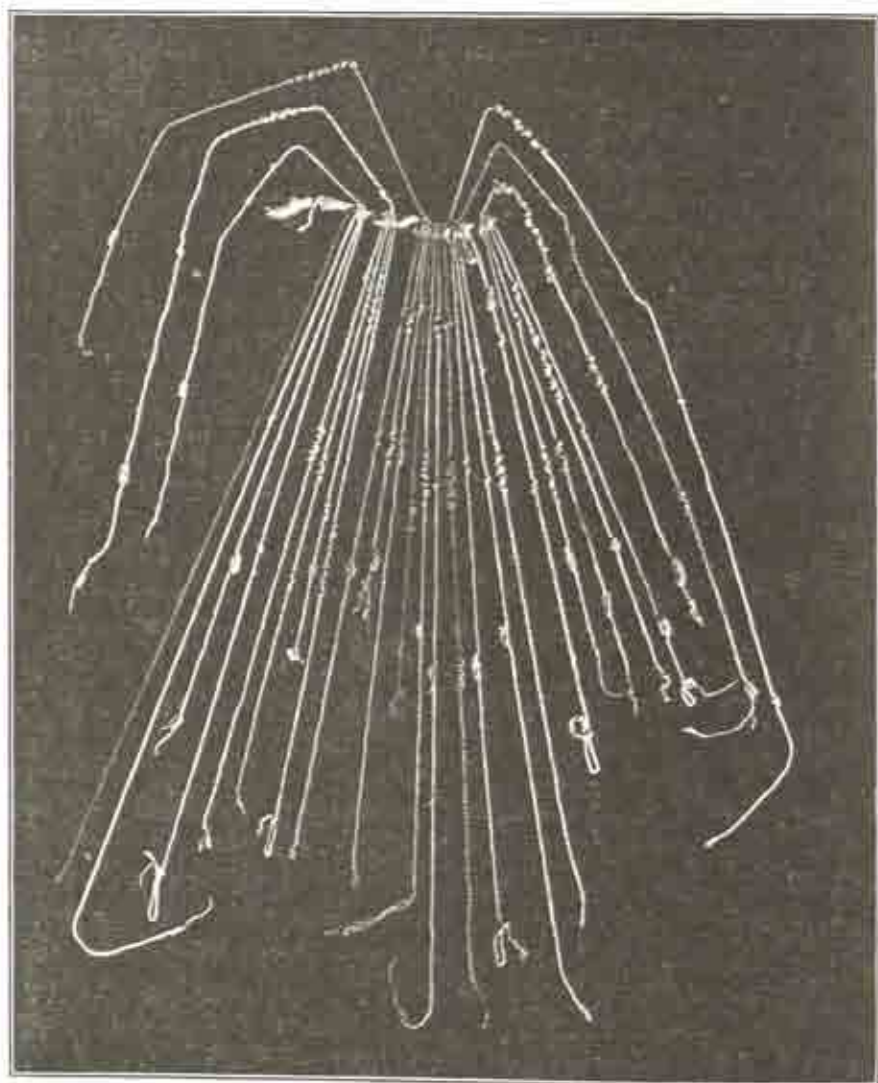
tative specimen to determine what light it may throw on these questions.

The specimen shown in pl. XXIV is No. 8713 of the Bandelier collection in the American Museum of Natural History in New York City, and is one of a number of similar specimens from Huando, on the coast north of Lima. This village was of the Chancay tribe, which was subdued by the Incas some time before the Conquest, and from which tribute was levied. The characteristics of this and the other specimens from this vicinity are: (1) the practice of using the long knot for units only and groups of single knots for the higher orders; (2) the use of the loop on the first (or last) cord of a group; and (3) the pendent cords are grouped by passing a top cord through the top loops of the group as in fig. 45. *The top cord sums the numbers on the pendent cords through which it is looped*, thus giving an accurate key to the numerical character of the knots. Some difficulty was experienced in reading the long knots, owing to the condition of the cord. In the accompanying table is given the first reading, followed by the probable reading in parentheses. Pl. XXIV is from a photograph of the quipu; pl. XXIII is a diagram of the arrangement of the knots, and of their numerical significances.

The following hypothesis may be made in regard to this quipu. It is possibly a record for six periods or years of four kinds of objects.

CONCLUSIONS

1. These knots were used purely for numerical purposes.
2. Distances from the main cord were used roughly to locate the orders, which were on a decimal scale.
3. The quipu was not used for counting or calculating but for record keeping. The mode of tying the knots was not adapted to counting, and there was no need of its use for such a purpose, as the Quichua language contained a complete and adequate system of numeration.
4. Other specimens examined contain the same types of knots, there being but ten variations in all, two forms for the single knot and eight long knots. These eight differ from each other and from the single knot only in the number of turns taken in tying. There



AN EXAMPLE OF THE HIGHEST DEVELOPMENT OF THE QUIPU AS A NUMBER RECORD
 American Museum of Natural History, U-8373. Scale 1.

TABLE OF KNOT READINGS AND COLORS

Strands	1000's	100's	10's	1's	Color
Main cord	—	—	—	—	White and dark brown
1	—	—	—	—	Brown
2	—	—	1	—	White
3	—	—	—	6	White
4	—	—	—	1	White
Sum	—	—	1	7	
a	—	—	1	7	Very light brown
1	—	1	5	—	White and reddish brown
2	—	6	4	1	White and light brown
3	—	6	3	6	White and dark brown
4 ¹	—	—	9	—	White and dark brown
Sum	—	13	21	17	
b	1	4	1	7	White and light brown
1	—	1	3	4	Brown
2	—	3	6	5 (6)	Brown
3	—	2	5	—	Brown
4	—	—	6 (5)	5	Brown (darker)
Sum	—	6	19	15	
c	—	8	—	5	Light brown, reddish
1	—	—	8	6 (7)	Blue
2	—	3	1	9	Blue
3	—	1	6	8 (9)	Blue
4	—	—	3	6 (7)	Blue
Sum	—	4	18	32	
d	—	6	1	2	Light brown, yellowish
1	—	—	1	7	Light blue and white
2	—	—	6	—	Light blue and white
3	—	Fragmentary	—	—	Light blue and white
4	—	—	1	1	Light blue and white
e	—	1	3	3	Light brown and dark brown
1	—	—	8	9	Light brown
2	—	2	5	8	Light brown
3	—	2	7	3	Light brown
4	—	—	3	8	Light brown
Sum	—	4	23	28	
f	—	6	5	8	Light brown

is nothing about any specimen examined to give the slightest suggestion that it was used for any other than numerical purposes.

¹ Fragmentary subsidiary cord, attached (?); discrepancy of 100 in count.

It may be that through the irony of fate no historical quipus, if they ever existed, have been preserved.

5. If the hypothesis that this quipu is a record of the same classes of objects for six periods be correct, it would seem to indicate that the colors in this case have no special significance, but were taken according to the fancy or convenience of the maker. This does not signify that there was not a rough color scheme in use for some purposes.

6. These specimens confirm in a remarkable way the accuracy with which Garcilasso described the manners and customs of his people.

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SOME NOTES ON THE PAWUMWA INDIANS OF SOUTH AMERICA

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DURING 1907-1910 I was in central South America collecting fishes and other fresh-water animals for the Carnegie Museum. The appended map gives the route of the expedition. Throughout this long journey I was the only white man on any of the interior trips. No interpreters were employed, and therefore I was forced to learn some of the native, including Indian, dialects, in various parts of South America. As a result I obtained considerable first-hand knowledge of many tribes of South American Indians. I had previously been on two blind-fish expeditions to the caves of Cuba, and my experience with the natives of that island made it easier for me to regard the Indian from his own viewpoint rather than from that of a white man. The observations recorded in these pages are in a measure the result of three years of field work as a naturalist in tropical America.

The purpose of this paper is not to give my experiences with numerous South American tribes of Indians which are more or less civilized or have been directly or indirectly influenced by civilization during the last three centuries: it is to give my observations on one tribe, the Pawumwa, who are apparently unknown to science and live under conditions little or not at all affected by the civilization of the white man.

My observations have led me to the conclusion that the South American Indians are a nervous, excitable, cowardly race; that they have become dangerous only after contact with the whites, and must not be regarded as cannibals.

The map (fig. 46) and notes published in this paper will also

¹I am indebted to the Carnegie Museum for the opportunity to explore central South America. For a fuller account of the expedition see *Ann. Rep. Carnegie Museum*, 1911. I am also indebted to Dr R. H. Lowie and Dr L. J. Frachtenberg for their assistance in preparing these notes.

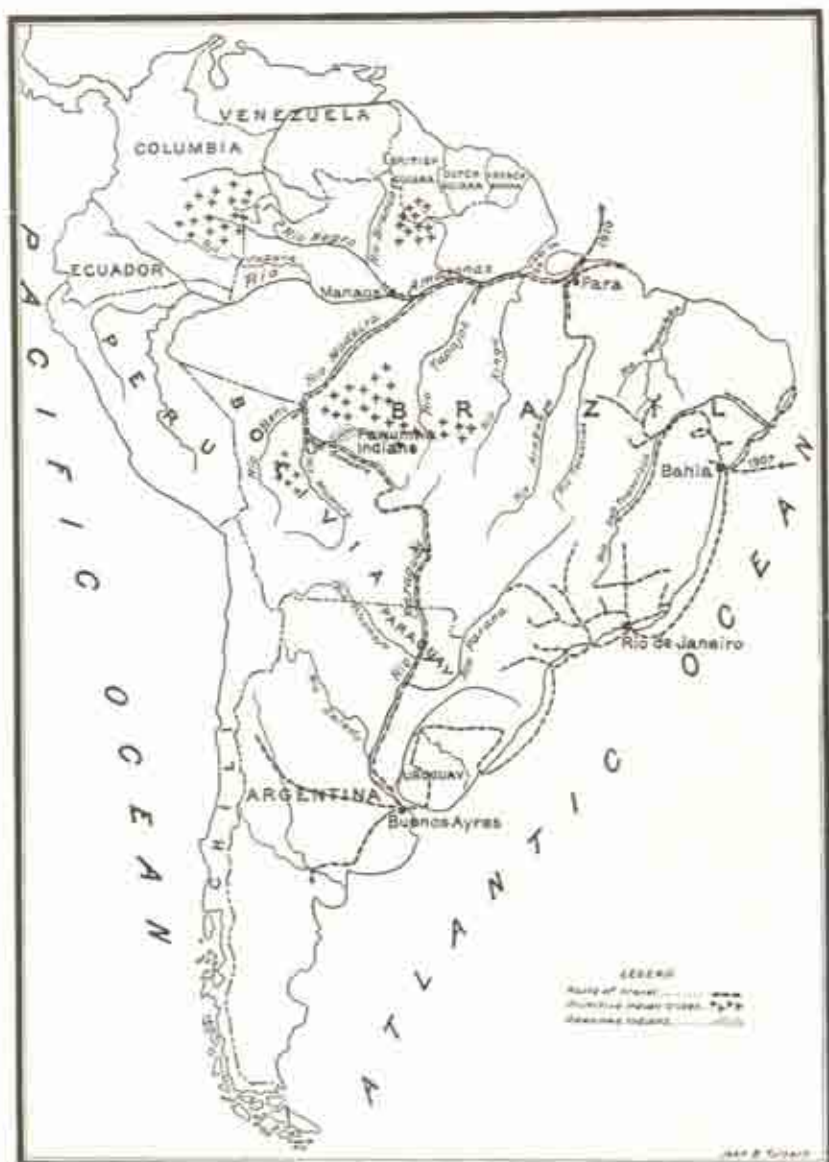


FIG. 46.—Itinerary of 1907 and 1910, with areas occupied by primitive tribes.

indicate the regions of South America covered by my travels in which primitive Indians live. I therefore hope to arouse an interest in these areas and make an appeal that exploration be undertaken promptly, lest primitive conditions be destroyed by the *serringueiros* (rubber cutters) before modern scientific study of them can be made.

Before presenting the observations on the Pawumwa Indians, it must be noted that great difficulty was encountered in learning even a few words of their language during my brief acquaintance with them. I was unable to take any skull measurements, because the natives could not understand their importance. My photographs of them were spoiled in passing the twenty-seven Madeira-Mamoré falls during the rainy season. However, the imperfect study of these Indians here presented may be of some interest in view of the fact that Rio Guaporé has been descended by only one other naturalist, Johannes Natterer.

During the first two years of active field-work in the interior of South America I was unable to meet primitive Indians. I saw many signs of Indians, but the more primitive ones always fled on my approach. It was therefore necessary for me to forego my desire to meet absolutely primitive Indians in favor of the hope to find a tribe that was influenced just enough to accept the friendship of the white man. This hope was finally realized during August, 1909, along the lower course of the Rio Guaporé.

Near the mouth of Rio São Miguel is a rubber camp that has recently been established on the Brazilian side of Rio Guaporé. Great care was taken in exploring and opening a road into the dense forest between the fork of Rio São Miguel and Rio Guaporé, because all this region was known to be a hunting ground of Indians. An old negro in charge of the establishment of the rubber camp gave me the following account of their first contact with the Pawumwa Indians.

They had been at work for about two months and had seen no Indians. Each morning they crossed the Guaporé to their work on the Brazilian side, and each evening they recrossed to sleep on the Bolivian side. One evening, when they were returning to their canoe, they were confronted by a large Indian, who proved

to be the chief. He rushed toward the old negro and his companions, shouting all the time, but the negro stood his ground and ordered his companions not to shoot. He embraced the chief, who then whistled, when suddenly many warriors appeared from all sides. The chief then went in advance toward the canoe in order to pacify the warriors whom he had stationed there to finish the slaughter if a battle had ensued.

The rubber cutters took the trembling Indians across the Guaporé to their temporary camp on the Bolivian side. They exchanged presents, but the Indians trembled with fear and did not sleep during the following night. The next morning the rubber gatherers took the Indians back to Brazilian territory, and the two parties separated without being able to understand a word of each other's language, though the old negro had companions who spoke the languages of the Parecis, Paucerne, Guaraní, Chiquitano, and Guarayos.

About a year later a few of the same Indians, with several other tribesmen, came back to the rubber camp. The good old negro prohibited any sort of abuse of the Indians, in the hope of establishing a treaty with them. This visit was followed by another. I had the good fortune of being present during the fourth visit, in August, 1909. At that time a petty chief with some twenty followers came down from the headwaters of Rio São Miguel to fish in Rio Guaporé. It was his first appearance at the rubber camp. A few days later a greater chief arrived with about fifty followers, this being his second visit to the camp.

Before giving my observations on these Indians I think it desirable to present a brief description of this part of Brazil. The Guaporé is one of the most picturesque and interesting rivers of tropical South America. It rises on the sand-capped barren highlands of Matto Grosso, Brazil, near one of the headwaters of Rio Paraguay. After flowing southward and westward for almost two hundred miles, it makes an elbow-bend, flows northward and north-westward, and finally empties into Rio Mamoré. From Villa de Matto Grosso (Villa Bella, the first capital of Matto Grosso) to the Mamoré, it has a continuous dense tropical forest along both

margins, excepting in two places, one of which is known as Campos dos Veados and contains about sixteen square miles of grassy plains. Naturally, some ten miles or more inland from each margin of the river, *campos* are found as soon as one leaves the dense forest and approaches the distant faces of the dissected highland along whose bases much sand is deposited. The highlands are capped with sandstone of Permian age; hence Rio Guaporé is, geologically speaking, very old. Its age is shown by the great width (one hundred miles) of the valley in its central course and by the vast amount of the highland that has been eroded and washed away. This great transformation of the highland brought about by a long interval of erosion has produced complex environments where the evolution of plants and animals has reached its climax. The forests are rich in nuts, fruits, game birds, and animals; the rivers abound in fish and turtles. Hence the Pawumwa Indians are surrounded by the richest natural resources offered to primitive man. The climate is usually a delightful tropical one, especially during the dry season (April to October), excepting for an occasional cold southwest wind, therefore little clothing is needed. The region is, however, poor in mineral deposits, consequently wooden implements are to be expected. The region is infested with ticks, flies, mosquitoes, fevers, etc., but it is not so inhospitable to man as regions of lower altitude, like the central course of Rio Madeira.

When I first met the Pawumwa they were shaking with fear. Even after I had learned a few words of their language, they would run and hide. They were at first very suspicious and ever ready to steal and to deceive me, but after I had gained their confidence, they were a "jolly lot of children," and not at all stoical. At first one would call an object by one name, while another individual would give it a different name. I finally called a dozen of them together and seated them in front of me. In less than five minutes they became restless, but during similar short interviews I was at last able to get a small list of words confirmed by several individuals all answering at the same time. This study progressed more rapidly after I was able to make them understand that I was going to return and present them with clothing, beads, firearms, fish-

hooks, etc. After about two weeks, I was able to take them with me when I seined the river. Often I would present them with a canoe load of fish. This perhaps more than anything else caused these Indians to regard me as the greatest of great chiefs. In fact several individuals wanted to join my people. Even the daughter of one of their greater chiefs voluntarily offered to go to "my tribe".

They were extremely excitable and emotional, and easily frightened, as are most men living in similar regions where, day and night, one must always be prepared to fight some human or animal enemy. They begged me to give them a gun, because a *pum* (report of a gun) would be sufficient to scare away the inimical tribes farther inland, of whom they were in fear. These inland tribes are unknown—they may be Nymbycuaras found on the highlands along Rio Juruena of Rio Tapajos.¹

Most of the Pawumwa Indians are short and thick-set, but a few individuals are tall and slender. For the greater part they have round heads, but the shape of the head also varies a great deal. Their color varies from dark copper to light copper. The trunk is well developed, but the arms and legs are rather slender. Their backs are flat, as appears to be the rule when men sleep constantly on the ground. Like all other primitive Indians, they are not strong in our athletic sense. I could lift more, and could out-run and out-throw them, but they exhibited greater endurance. For example, they could carry a load of fifty to a hundred pounds all day without resting, and this I was unable to do.

On a limited scale they plant tobacco, corn, mandioca, and a few other plants. They kill part of the timber and burn the brush, then the seeds are placed in holes made with pointed sticks of hard wood. This planting is done near their permanent village, situated on the headwaters of Rio São Miguel. All work together, and the chief always obtains more of the crop than any of his tribesmen. If any one refuses to assist in planting, the chief forces him to work. I saw one Indian with a long scar on the side of his head and neck, the result of punishment for laziness. The chief struck him with his four-foot heavy black *cereve* (palm) sword, sharpened on both

¹ Cf. *Brazilian Telegraph Cum. Report*, 1909-1910.

edges. The Indian said that he slept fourteen times (days) before he awoke and should never refuse to obey the chief.

The chief himself is not always the largest man in the tribe, nor the strongest; but he is a very serious or wise-looking individual, and is always taciturn. The son of a chief does not inherit the position unless he has these characteristics. I saw the son of one of their dead "great chiefs" and he belonged to a little chieftain's tribe. They had one great chief, two others of different grade below him, and three little chiefs. In regard to important questions, like war with hostile tribes, they obey the great chief. The greatness of the chief is measured by the number of his followers. I met one young little chief who had only seven followers; but he impressed me as being wiser than some of the greater chiefs; and as the number of his followers increases, he will probably usurp the place of a higher chief and finally become the great chief. This is done even at the expense of intra-tribal warfare, or else by murdering the greater chief and then usurping his position. In fact they often have individual and intra-tribal fights over women and over individuals who leave one petty chief to join another petty band.

The tribe consisted of about three hundred individuals. Their hunting ground covered at least nine hundred square miles. This estimate is as low as can possibly be made for forest Indians who supplement the natural products by small plantings, and it will give an idea of how many Indians might have existed in South America during pre-Columbian times. But three square miles per individual is too low an estimate when we take into consideration the scanty natural products on the highlands and in the various desert-like regions of South America. The existence of a crude form of agriculture does not prove that these Indians are not primitive, for I believe that both before and after the discovery most South American Indians cultivated certain plants in greater or less quantities, the species varying with the location of the tribe and including mandioca, peanuts, tobacco, corn, and the cane.

Around their camp I had an opportunity to observe some of the customs and habits of the Pawumwa. They usually went hunting with bows and arrows early in the morning, and often shot fish

along the banks of the river. One day the petty chief shot an electric eel. He attempted to cut off its head with my hunting knife, but as soon as the knife touched the eel he tumbled with a grunt to the ground. He was intelligent enough not to use the knife a second time, so he killed the eel with a club and then roasted it. They roast fish with scales, intestines, and all intact, over hot coals by placing them on green limbs tied with bark to a tripod. As soon as the fish are roasted, the father and mother and their smaller children eat together. The boys and girls pair off, and as a rule the boys who capture the most game have the choice of the girls.

They do not eat anything seasoned with salt, hence they did not like my food. I am inclined to connect their peculiar wild odor with the lack of salt in their food: at any rate two individuals who were taught to eat salt-seasoned food lost this peculiar odor. Their perspiration was tasted and it lacked salinity. They bathe at least twice a day, even when they have the fever, in order to cool their bodies, hence the peculiar wild odor is not due to lack of bathing. The absence of an excess of salt may in some way change the nature of the external secretions and excretions, or else permit a greater decomposition of them on the surface of their bodies. At any rate animals and Indians that eat an excess of salt (NaCl) do not have such strong and offensive odors as do those obtaining the salts necessary for a correct osmotic pressure in the blood from only plants and the flesh of other animals. I offer this view only as a suggestion, which I hope will be tested by experiments, as it may be of importance in the case of all animals living in regions devoid of salt licks. If it be only true in part, then the decomposition of waste products in the case where no special odor glands are known may be a means by which animal species are able to detect one another. At all events one can actually smell the trail passed by an old forest jaguar or a Pawumwa Indian for many minutes after either has passed.

The Pawumwa eat almost any kind of animals. They do not, however, eat snakes, though they relish alligators and monkeys. They take advantage of the abundance of fish in the rivers. They are constantly roasting and eating, for they never or seldom eat a large meal, preferring to mince all day and part of the night.

As soon as the girls are old enough to be courted they have their lips pierced. A long cylindrical olive-colored *inóokôt* made from the resin of the *porora* tree is inserted in the lower lip, and a shorter stud made from the same resin is inserted in the upper lip (fig. 47). This ceremony is performed by the chief, and usually takes place about the time of puberty or a little before (often before nine years of age in the better developed girls). The incisions are made with sharpened splinters (knives) of *taquara-ussú* (big bamboo). This is a sign that the boys and unmarried men may court these girls. The suitor is usually more successful if he is a good hunter and fisherman. He gathers the game and sits down by the girl, who roasts it. In this way the girls become accustomed to the boys and men, with whom they sleep around the camp-fires. Later they are given a husband by the chief and are usually married to a man of the same subtribe.



FIG. 47.—Lip plugs of resin from the *porora* tree (a for upper lip; b for lower lip).

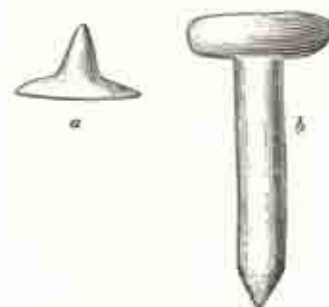


FIG. 48.—Lip plugs of white quartz, (a for the upper lip; b for the lower lip).

When the girls are married, often at from nine to twelve years of age, the *inóokôt* is taken out, and a larger incision is made and a *pikín* stone inserted (fig. 48). This is a piece of polished white quartz, which comes from the hill or small mountain known by the same name. I offered some presents to an Indian if he would obtain for me a set of these stones, but when he attempted to take those of his wife, she ran to the chief and the husband received a severe flogging. These stones must not be removed from the lips of a married woman, because they are a sign of wedlock, and their loss may be punished by death. They are not used for personal adornment, but serve as a kind of marriage certificate. Their peculiar customs of marriage often lead to quarrels over girls and women among the male members of the tribe, and even between men of different subtribes. The family ties are not held sacred.

Most of these Indians were entirely naked, but I later learned that some of them had taken off their bark clothes in order to beg clothing. This gave exceptional opportunity to observe their body markings, etc. The majority were badly scarred by insect bites and other wounds, but I was unable to detect any signs of syphilis or other venereal diseases common among Europeans. They pluck the hairs from the arm-pits, groin, eyebrows, and eyelashes; in fact no hairs were seen excepting the long hair of their heads. They claim that they can see better without eyebrows and eyelashes, while the body hairs are pulled out so as not to harbor vermin. They all have lice on their heads, and, as is quite common among South American Indians, they either eat them or kill them with their teeth. I have often seen girls catching lice off one another's heads. The first louse captured is devoured by the owner, while all caught thereafter are crushed by the teeth of the catcher. In the above case, the pulling out of body hairs appears to be useful to them and not an attempt to beautify their bodies. The absence of salt in their perspiration also appears to be connected with the pulling out of body hairs. The sweat does not inflame their eyes, and with absence of clothing the arm-pits and groin are not chafed.

The men insert a short stick the size of a match-stem in the lower lip. This, they claim, helps them to place their tongues in various positions when they mimic the calls of birds and game animals. Nearly all men and sexually mature boys, and especially unmarried men, tie a string around the end of the penis (at least when they have no bark clothing), which is then stretched up and tied to a string that encircles the abdomen. This custom is, I believe, a sign of modesty.

Both sexes wear a small short stick in the nasal septum, the ends protruding into the nostrils. This peculiar custom is associated with a primitive idea of medicine. They claim that disease is something solid and travels in a straight line like an arrow, while air is like nothing and can bend corners. Hence, when they breathe the disease strikes the end of the stick and falls out of their nostrils, while the purified air passes into their lungs. Both sexes also wear sticks in the lobes of their ears, but I was unable to obtain any explanation of this custom.

Both sexes also tie bandages around their wrists, in some cases around their forearm and biceps and their ankles and calves. They claim that these bandages prevent poisonous snake bites from killing them. It is conceivable that some former medicine-man found that by checking the circulation of the blood through a limb thus wounded, the sudden depression of the respiratory and circulatory organs was prevented. After his death, it is possible that the Indians adopted the habit of bandaging the limbs because they considered it useful. At any rate, great constrictions of the arms and legs due to bandaging are not to be considered a thing of personal ornament, for I observed that the boys with more perfect physiques were usually more successful in making love to the girls.

The Pawumwa use palm spines dipped in a fruit known in Brazil as *jenepapa* to make black designs in their skins. Their system of tattooing is mostly for tribal distinction, especially in case of battle. The daughter of the chief was marked differently from the other girls. One young girl, about ten years of age and wearing an *inóokôt*, had tattooed lines extending from her knees over her thighs. These lines met in an arch beneath the navel, whence two lines extended to the vulva and two to the mammary glands. Lines extended from the breasts to the neck, and others traversed the forehead and cheeks. I was unable to determine the meaning of the tattoo devices. As a rule, black tattooed lines are found on the legs, arms, lips, nose, cheeks, and above the eyes.

Most of the implements of these Indians are of wood, but this is due to the environment in which they live. Metals, flint, etc., are not found on their hunting grounds. They have lip stones for married women, as above noted, and also crude axes and grain and nut crackers made of stone. They manufacture some large undecorated earthenware pots for use in making a beverage from chewed corn, and smaller pots in which arrow poison is brewed. Their knives are made by sharpening dried splinters of *taquara-ussú* with the two gnawing teeth of agouti, a rodent. Arrows also are made from *taquara-ussú*. In addition, they made arrow-points from hardwood, *cereve* palm, catfish spines, sharpened bones of animals (usually the femur of a monkey), and human bones obtained from brave enemies killed in battle.

The poisoned hard-wood arrows have a cotton string wrapped around the slender point, which is soaked with a black poison. The arrow-point is almost cut in two, so that it will break off in the animal when it is shot. They carry the poisoned arrows in bamboo tubes. They also have *taquara* blow-guns, about six feet in length. The arrows or delicate darts used in these guns are usually made from palm splinters. They wrap cotton around one end and poison the other end of the splinter. When this is inserted in the blow-gun, they blow against the cotton, and the dart shoots forth, enabling them to kill monkeys in the tallest trees. The poison is boiled from a vine called *awan*, which they would not show to me. The poison collects as a black tar on the boiling water. It is very probably *curaré*, but the poisoned arrows left at the Carnegie Museum have not been chemically examined. The bows are about five feet long and made from a hard black palm. The bow-string is thick and is made from native wild cotton.

Their clothing, when they have any, is made from the beaten bark of the wild fig-tree known in Brazil as *figueira*. They plait small cotton and bark fiber hammocks, but prefer to sleep on the ground with their feet turned toward the fire. I did not see any hats, and they appear to lack the skill of plaiting and weaving that is so well developed among the other tribes of South America. However, they exhibit great skill in fastening split feathers to the reed end of their arrows. This is a tribal marking, though I was unable to see how they could distinguish their bark wrappings for holding the arrow-points and their string wrappings for holding the feathers to reed ends from similar arrows of other tribes. But then any Pawumwa could without hesitation identify the arrows—always shouting "*Kabici!*" when shown arrows from other tribes. They also had a feather headgear used both to frighten the enemy and to deceive themselves by thinking that they were cunning and fleet like some animals.

Their huts are very simple, being made by tying poles together and sticking one end in the ground and then making a thatched roof of either grass or palm leaves. They make a drink by chewing corn and spitting it into an earthen pot, where it is allowed to

ferment; it is then filtered through leaves and kept till a certain moon in August. At this time they hold a tribal meeting, but I failed to ascertain its meaning, though it may have a religious significance. The Pawumwa have no dogs.

When we compare the Pawumwa with the Incas or with white men, they appear to be of an inferior type, but such a comparison should not be drawn. We should regard them with reference to the existing and past relations among themselves and to the other living things found in their environment. When this is done, we see that they are highly specialized for life under existing conditions. In fact they are keen, close observers, and know the properties of most food and poisonous plants and animals. In short, their mode of life is adjusted to meet the existing conditions of the jungle.

I often went seining with the Pawumwa. They were always afraid of alligators, large snakes, and the like. Their fear was shown especially on one occasion when they turned loose one end of my large seine and fled to a sandbar when an alligator swam against the net. I had been at work for almost two hours removing the limbs and water plants so as to make a large catch of fish, but as soon as the alligator struck the net, the Indians turned it loose and hastened to the bank, shouting all the while. This incident impressed me with the cowardice of the natives. In battle they become so excited that little danger is encountered after their first round of arrows is discharged. Numerous cases, including a personal experience at the waterfall of Forto Principe da Biera on the lower Rio Guaporé, leave little doubt in my mind that primitive South American Indians are cowardly and become really dangerous only after coming in contact with white men.

The Pawumwa are not cannibals, nor are any of the South American Indians found in the region traversed by me. As already stated, the Pawumwa use the bones of slain enemies to make points for arrows, because such are supposed to be more effective. One always hears from the natives that the people of the next tribe are cannibals, but when one arrives it is always the next tribe, and so on. I have never met a man who has actually seen natives eating human flesh. The evidence is always indirect, such as teeth driven

in boards, skulls on poles, human bones made into arrow-points, etc. The Indians may boil the meat off the bones when they want them, but this is usually unnecessary because the tropical ants, bugs, flies, and other creatures, especially armadillos, soon clean a skeleton. If Indians camp or roast their game near such skeletons, they are at once considered cannibals by the civilized natives. I met the father of a boy who had been killed in the Serra de Pacas Novas, which is on the Brazilian side of the Guaja-mirim waterfall of Rio Mamoré. The father and the other hunters buried the boy after repulsing the Indians. A few days later they went back after the remains of the boy, but found only his bones and signs of a campfire. The father felt certain that the Indians ate his boy, but when I questioned him about the alleged cooked meat and the hair and bones he was unable to give any evidence in proof of his contention. Sensational explorers are always prone to spread what their guides and native interpreters tell them. For my part, I doubt the existence of cannibalism in any part of South America, at least during historic times.

I hope that these imperfect notes on the Pawumwa will stimulate a thorough study of the few remaining tribes of primitive Indians before the rubber cutters shall have demoralized them. Let us also hope that the explorers of the future will break away from the beaten trails of civilization and study any of the following regions, which are designated by crosses on the map.

1. The Brazilian side of the lower Guaporé and Mamoré rivers extending eastward to the headwaters of Rio Tapajos and Rio Xingu.

2. The region northeast of Manaus far into the regions between the headwaters of Rio Trombetas and Rio Branco.

3. The region of the Andean affluents of Rio Negro.

4. The East Andean region south of Rio Beni.

Of these four regions the portion between Rio Guaporé and Rio Tapajos is the least known. In fact only a small portion of this vast area was traversed by the Brazilian Telegraph Commission during 1909 and 1910.

The accompanying map (page 334) shows the route of the

writer marked in continuous dotted lines. The dotted area on the Brazilian side of Rio Guaporé marks the hunting ground of the Pawumwa Indians. The areas marked with crosses designate the regions where primitive Indians may be found.¹

The following brief vocabulary of the Pawumwa language was obtained with great difficulty, because none of the neighboring Indian tribes could speak this language. I originally spelled the words in accordance with the Brazilian system of writing Indian languages, such as Guarani. As I had not been consistent in the use of some of the symbols, it was desirable to have the list revised by some one conversant with the methods ordinarily employed in rendering the sounds of unwritten languages. This was done by Dr R. H. Lowie, for whom I pronounced each word in the vocabulary according to the best of my recollection. Though the phonetic value of my list is admittedly slight, it may prove of some use to students of South American linguistics.

Vowels have their continental values: *ⁿ* indicates nasalization; *tc* represents "ch" in English "church"; *c* the sound of English "sh" in "hush"; *j* French "j" in "jour." I had difficulty in distinguishing the sounds of *n* and *m*.

Vocabulary

itopi', hat	iparama'tci, neck
katô'wa ^a , fish	tra'itci, ² ear
mô'kokamare'm, <i>imbira</i> (Guarani tree giving bark string)	tupaka'tci, mouth
a'tipêtcî', head	kă'rati'tci, chest
makuwamnatci, hand	i'ritci, nose
pikirina'tci, arm	tu'kitci, eyes
	pitci'kina'tci, nails or claws

¹ A fairly complete bibliography of the literature on the semi-civilized tribes of central South American Indians is found in Dr H. von Ihering's paper on the *Anthropology of the State of São Paulo, Brazil*, second enlarged edition, published in 1906 by the *Diário Oficial*, São Paulo. The following may also be consulted: Telemaco Borba, *Observações sobre os indígenas do estado do Paraná, Rev. do Museu Paulista*, vol. vi, 1905. Ricardo Krone, *Informações Etnográficas do Valle do Rio Ribeira de Iguaçu. Comissão Geographica e Geologica do Estado São Paulo*, São Paulo, 1908. Conular report on the Paraguayan Indians, by Dr I. Potter, 1907; may also be mentioned here.

² I noted at first *traklci*, but the *k* is not pronounced as an aspirate and may have denoted a glottal catch.

kata'mtci, foot	mapanā'ma, lazy, tired
tí'nitci, hair	môkû'm, leaf
i'titci, teeth	jahû'mune, I am going
na'makwa'm, earth, or soil	tû'ro. (tô'ro?), hut, or <i>aldeia</i>
atiri'm, grass, or leaves, to cover a hut	tiki', vessel, bottle, basin
gwa'piru', sun	ka'ukri'gna, image, in looking glass, etc.
āwī'n, bananas	tahû't, tree
akū'pa, mandioca	brahû'nwa, old man, aged
atcukā'u, sugar cane	pa'kaawa'mna, I am hungry, I want to eat
mū'rū', fariñha	kabi'katci, tongue
pihû'n, <i>jacá</i> (a bird)	pawa'nwam, to breathe
mī'nitci'n, <i>rapadura</i> , or brown sugar, sweet	pa+i'wam, coward
feverê're, peanut	titi'wam, to hide
trami'n, <i>arara</i> (a large parrot)	pīraa'wam, to urinate
tōhi'n, parrot	tciki'n, <i>trakaira</i> , <i>robuffo</i> (a fish)
ino'oko't, resinous labret for un- married girls	kōtci', <i>piranha</i> , <i>caribe</i> (a fish)
pō'rorā', tree giving resin for <i>inóokôts</i>	pari'ra, <i>jacunda</i> (a fish)
piki'n, lip stone of woman	ta+i'vi, <i>leitão</i> (a fish)
tūkara'man, stone	trā'wa'm, <i>sorubim</i> , <i>pirtado</i> (a fish)
iri', bark clothes	ramē'k, <i>pacú</i> (a fish)
iki't, knife	krū'kuvī'n, <i>corvina</i> (a fish)
īwi', toucan	ari'ham, <i>bagre</i> (a fish)
kā'rati'tci, heart	imli', <i>pirarara</i> (a fish)
pana', tree, woods	pī'ambā'na, lemon
i'toati', <i>bacury</i> palm	panmi', orange
imē', <i>bigna</i> (snake bird)	patci'ruwa°, to dress, clothes
kām, water, river	prini'nprinā'matci, big toe
ā'ruke'm, Rio Guaporé	tipā'ratci, fingers
a'pita', Rio São Miguel	ā'rapa'iina, pretty
āwa'n, vine from which the arrow poison is extracted	turi'mā'pa, katydid
tra'pa, there is not, all gone, "for- get it," <i>no hay</i> (Span.)	ō'hi'ru, gentleman
trāmi', to sleep	truhū', gray
pa'nawn', moon	namatu', namatō'k, mouse, or rat
	naki'mī'na, very ugly
	ini'nka, fear
	ati'pitci, beard, or whiskers
	hinā'vitci, throat

pĩcĩra'mna, to cut	ũtĩ'n, star
mĩ'merĩ'm, iron, metal	õ'kari', belly
ka'+una, I eat	pĩku'ri'nutci, shoulders
ka'+tu, food, hungry	kara'ka+u, snake
wimã'na, to smoke	kava+'i'no, brave(?)
a+'i'wi, tobacco	gwivia'mo, mosquito
piki'n, small mountain where the Indians get quartz; lip stones of women	karapa'pa, <i>curimata</i> , <i>pappalerra</i> (a fish)
pahũ'umuwa'm, man	ivi', <i>peixe de cachorro</i> (a fish)
je'marima', woman	hĩri'tci, nose
marahu'onuwa'm, child	ũ'+o'm, fine string
traku', bird (also chicken)	nara'mnõ, peccary, hog
ĩka't, penis	utĩ'm, <i>mutum</i> (a bird)
rintiri'tci, testicles	hĩmĩ', tapir
tubike'ritci, anus	tapi'm, <i>coati agouti</i> (a rodent)
imã'ukakam, vulva	kabi'ci, "bad man," dangerous, savage, enemy
pawã'mnakaka'm, to copulate	ã'aviri'm, bugio (a monkey)
karatĩ'kakam, mammary glands	kati', pain, it hurts
imwim, monkey	gwini'hĩtci, fat
wã'rãm, <i>coatd</i> monkey	i'tcẽ', fire, or flame
kĩ'na'm, jaguar (the second syllable with rising inflection).	ta'+uhĩ', honey
	tĩ'kẽ, <i>toquari</i> , or Brazil, nuts

LINTON, INDIANA

THE VARIETIES, CLASSIFICATION, AND ORIGIN OF MAGIC¹

BY JAMES H. LEUBA

I. THE VARIETIES AND CLASSIFICATION OF MAGIC

THE term magic I would restrict to those practices intended to secure some definite gain by *coercitive action* in essential disregard (1) of the quantitative relations implied in the ordinary and in the scientific dealings with the physical world; (2) of the anthropopathic relations obtaining among persons.

Although magic never makes an anthropopathic appeal, it frequently brings to bear its peculiar coercitive virtue upon feeling beings. It aims, then, at compelling souls, spirits, or gods to do the operator's will, or at preventing them from doing their own. In necromancy, spirits are summoned by means of spells and incantations. In ancient Egypt the art of dealing coercitively with spirits and gods reached a high development. Maspero, speaking of a curious belief regarding names, says, "When the god in a moment of forgetfulness or of kindness had taught them what they wanted [the sacred names], there was nothing left for him but to obey them."² At Eleusis it was not the name but the intonation of the voice of the magician that produced the mysterious results.³

¹ A further discussion of magic and of its relation to religion will be found in the author's book, *A Psychological Study of Religion: its Origin, Function, and Future*, New York, Macmillan, 1912.

² Maspero, G. C., *Études de mythologie et d'archéologie égyptiennes*, Paris, 1903, Bibliothèque Egyptologique, vol. II, p. 298.

³ Foucart, Paul, *Recherches sur la Nature des Mystères d'Eleusis*, *Mémoires de l'Institut*, vol. XXXV, 2d part, pp. 31-32. Cf. Maspero, op. cit., p. 303.

A surprising revival of the belief in the magical power of names came to my notice a few years ago. At a camp-meeting of Seventh Day Adventists in Massachusetts, I heard an ex-cowboy evangelist deliver an impassioned address on the power of the "Word". He shewed by many citations from the Hebrew and Christian Scriptures that the Book did not teach the direct action of God and Christ, but that whatever they did was accomplished through the power of the Word. It was by the Word, not by God, that the world was created, and it was by believing in the Word that men were saved.

But how should be classed the behavior of a suppliant who attempts by requests, offerings, adoration, or other anthropopathic means to induce a ghost, spirit, or god to give him magical power? The Dieri of central Australia in dry spells "call upon the spirits of their remote ancestors, whom they call Mura Mura, to grant them power to make a heavy rainfall."¹ This behavior belongs clearly to the religious type; but that which follows—the suppliant's use of the magical power secured from the spirit—is magic. A spirit may be asked to use his magical power himself. In that case the suppliant uses the anthropopathic method of bringing about a magical action.²

To one who approaches the subject of magic for the first time, the possibility of bringing order into the chaos of magical customs seems remote. Before taking up the origins of magic, we would better gain some knowledge of its many forms. This may be done conveniently by making a critical examination of a widely used classification, in the course of which study it will appear that several important varieties of magic fall outside of this classification.

"If we analyze the principles of thought on which magic is based," writes J. G. Frazer, "they will probably be found to resolve themselves into two: first, that like produces like, or that an effect resembles its cause; and, second, that things that have once been in contact with each other continue to act on each other at a distance after the physical contact has been severed. The former principle may be called the Law of Similarity, the latter the Law of Contact or Contagion. From the first of these principles, namely, the Law of Similarity, the magician infers that he can produce any effect he desires merely by imitating it; from the second he infers that whatever he does to a material object will affect

¹ Frazer, J. G., *The Golden Bough*, 2d ed., vol. 1, p. 86.

² Jevons's view differs from this in that for him the magical Power always belongs to a conscious agent. "Magic is the mysterious power of a person or conscious agent to cause injury—or, secondarily, it may be, benefit—to another person who may be at a distance; a power which when exerted is accompanied by, or ascribed to, an exclamation, a gesture or an action indicating and effecting what is willed. To us the exclamation or gesture indicates only what is willed. In the opinion of the savage, who fails to discriminate between the categories of likeness and identity, the action he performs not merely resembles, but is the action which he wills." (F. B. Jevons, *Magic, Proceedings Third International Congress of the History of Religions*, pp. 71-78.)

equally the person with whom the object was once in contact, whether it forms part of its body or not. Charms based on the Law of Similarity may be called Homœopathic or Imitative Magic. Charms based on the Law of Contact or Contagion may be called Contagious Magic."¹

This classification clearly embraces the larger number of magical practices, especially the injuring of images in order to injure enemies, the simulation of birth to produce child-bearing, the numerous cases of homeopathic magic both in medicine and outside of it; the contagious magic of navel-string and placenta, of wounds and blood, of garments, of footprints, and the like.² Yet several types of magic remain outside this classification, or are brought within it only by extremely far-fetched explanations. "The Bushmen despise an arrow that has once failed of its mark; and, on the contrary, consider one that has hit as of double value. They will, therefore, rather make new arrows how much time and trouble soever it may cost them, than collect those that have missed and use them again."³ Similarly other tribes attach a special value to a hook that has caught a big fish. One might bring the mental process involved here back to Frazer's second principle, Contagious Magic: "Things that have once been in contact with each other continue to act on each other at a distance after physical contact has been severed." But it is possible to make a simpler explanation than the ascription to the hook of a specific power acting telepathically upon fish. Nothing need be involved here, it seems to me, but the conviction that something that has happened once is likely to happen again. No principle is simpler and more firmly established than this; it is an imperfect form of this corollary of the Principle of Identity: something that has happened once will happen again under identical circumstances. The savage goes wrong because he thinks merely of the hook, instead of taking into account all the circumstances. But if he

¹ Frazer, J. G., *op. cit.*, 3d ed., vol. 1, p. 52. See also Frazer, *Lectures on the Early History of the Kingship*, Macmillan, 1905, p. 54; and A. van Gennep's review of that book in *Revue de l'Histoire des Religions*, 1906, vol. LIII, pp. 396-401.

² See for illustrations, *The Golden Bough*, 3d ed., vol. 1, pp. 25-214.

³ Lichtenstein, M. H. K., *Travels in South Africa*, vol. II, p. 271; quoted by Lord Avebury, *Origin of Civilization*, 6th ed., p. 34.

prizes the hook, not simply because it has already caught fish, but because he thinks of the hook as possessing an attractive power over fish, the mental process at the root of his action is another and a more complex one; he now believes in action at a distance.

Considered psychologically, the behavior of the savage when he prefers the successful hook may thus be of two quite distinct kinds. The magic based upon the simple conviction that what has happened once is likely to happen again finds no place in Frazer's system; for the two branches of magic that he recognizes "may conveniently be comprehended under the general name of Sympathetic Magic, since both assume that things act on each other at a distance, through a secret sympathy, the impulse being transmitted from one to the other by means of what we may conceive a kind of invisible ether."¹ There remains the question of fact. Does the savage act on these two principles, or only on the one mentioned by Frazer? Facts and arguments will be offered below in support of the former alternative.

Frazer's classification may again prove inadequate in regard to certain dances performed by the women when the men are engaged in war. "In the Kafir district of the Hindoo Koosh, while the men are out raiding, the women leave their work in the fields and assemble in the villages to dance day and night. The dances are kept up most of each day and the whole of each night. . . . The dances of these Kafirs are said to be performed in honor of certain of the national gods, but when we consider the custom in connection with the others which have just been passed in review, we may reasonably surmise that it is or was originally in its essence a sympathetic charm intended to keep the absent warriors wakeful, lest they should be surprised in their sleep by the enemy."² According to the author of *The Golden Bough*, this practice would thus fall under the Law of Similarity, to which he gives, as we have seen, a double form. It is the first alternative that applies in this case, "like produces like": the keeping awake of the women causes the men to keep awake. This is a possible explanation. But it is

¹ Frazer, J. G., *op. cit.*, 3d ed., vol. I, p. 54.

² *Ibid.*, pp. 133-134.

noteworthy in the other instances given by Frazer¹ that the stay-at-homes are not simply trying to keep awake but that they are doing many other things, not all of which can be interpreted as mimetic magic (like produces like).

It seems very likely to me that the primary cause of the dancing is not the belief that the keeping awake will make the warriors wakeful, but the excitement and anxiety under which the women would naturally labor while their husbands are fighting. A state of high tension may be expected to work itself off, not only according to a law of "like produces like," that is, of contagion, but in all sorts of spontaneous activities. The facts appear to agree with this theory. The dance is not kept up night and day in every tribe, and in most of them, so far as my information goes, there does not appear to be any deliberate purpose of resisting sleep. Nor do these women use dancing alone; in some tribes they refrain from sexual intercourse, believing that if they do not their husbands will be either killed or wounded. In certain islands the women and children are forbidden to remain inside the houses, or to twine thread or weave. If one turns to the savages' own explanation of their actions, one finds great variation. I do not discover in Frazer that any tribe gives the interpretation that he suggests; but he reports that the Yuki Indians say that if they dance all the time "their husbands will not grow tired." In Madagascar the women say that by dancing they impart strength, courage, and good fortune to their husbands. Why bring these various ceremonies back to an intention of keeping the warriors awake? Some of the actions may be inspired by that purpose, but why all of them? Let us say, rather, that the anxiety of the women tends to work itself off in spontaneous movements, some of them having, in the beginning at least, no mimetic or telepathic connection with the fighting of the husbands. They simply dance or jump up and down for relief, and the relief felt leads to the repetition of the movement. Thus the dancing habit is formed.

Now if the women dance while they are filled with a desire for the success of the men in war, does not our knowledge of

¹ Frazer, *Ibid.*, pp. 131-134.

psychology lead us to expect the formation of a causal connection between dancing and the success of the warriors? At first this connection will probably be regarded as general, and not as a specific relation between depriving oneself of sleep and keeping awake the warriors. The dancing, at this stage, will be a magical ceremony of the simplest sort. But certain mental tendencies readily lead to modifications of the primitive dancing. The minds of the dancers will at times be filled with images of the fighting, and these images will tend to shape the movements. In this way mimicry of fighting may take the place of the original dancing. Among the Tshi-speaking peoples of the Gold Coast, for instance, "the wives of the men who are away with the army paint themselves white, and adorn their persons with beads and charms. On the day when a battle is expected to take place, they run about armed with guns, or sticks carved to look like guns, and taking green pawpaws (fruits shaped somewhat like a melon), they hack them with knives, as if they were chopping off the heads of the foe."¹ In the Queen Charlotte islands, "when the men had gone to war, the women at home would get up very early in the morning and pretend to make war by falling upon their children and feigning to take them for slaves." Certain tribes went as far as to scourge severely two lads, by way of helping the warriors.

If any of these dancers accounted for the practice by saying that keeping awake helped warriors to remain watchful, I should look upon this statement as an afterthought. The idea of the danger of surprise to the sleeping men would readily enough connect itself with the dancers' loss of sleep, a loss arising from the dancing, which is itself an expression of anxiety.²

Perhaps the largest and most important class of magic not provided for in the classification we are considering is Will-Magic. Here is one instance taken from ancient India: In order to protect his belongings from destruction, the Buddhist monk is directed to make a "firm resolve," saying, "For the space of seven days

¹ Frazer, J. G., op. cit., 3d ed., vol. 1, p. 132.

² On dancing and its relation to primitive religion, see Irving King, *The Development of Religion*, 1910, pp. 108-112.

let not this and that article be burnt by fire, borne away by a flood, blown to pieces by the wind, carried off by robbers, or eaten by rats and the like. . . . Then for the space of seven days no harm will touch them."¹ This is not a request addressed to a spirit, but a "firm resolve" that the wish expressed shall be realized. In the Kei islands, when a battle is in progress, the women wave fans in the direction of the enemy and sing, "O golden fans! Let our bullets hit, and those of the enemy miss."² The essence of Will-Magic is the belief that an exertion of the will takes effect at a distance. This kind of magic may or may not be complicated by the addition of magical elements of another type.

Can Will-Magic be classed under Frazer's Law of Similarity? This law is expressed in a double form: "Like produces like," and "An effect resembles its cause." From this law, we are told, the magician infers that he can produce any effect he desires merely by imitating it. But imitation is not in the least a requirement of Will-Magic, although it may be superadded. The formula "like produces like" means, if it means anything, that because two things have elements in common,—shape, color, etc., what happens to one will happen to the other also. Nothing of this is necessarily involved in Will-Magic. The other form of the law, "an effect resembles its cause," applies no better. It means that if you want, for instance, a tumor to dry up, you can succeed by causing something else to dry up; or if you want jaundice to disappear, you can succeed by making the yellow color of some object, a flower, for instance, vanish. In these cases the effect you have produced becomes the cause of a similar effect.

It must be observed here that these two formulations of that which is given by Frazer as one law represent each a different mental process. If the savage is aware of this difference, the two mental processes should not be included under one principle. To do so seems to me to obliterate distinctions, rather than to bring order by means of a helpful generalization. If primitive man does not

¹ *Pali Texts, Visuddhi-Magga*, chap. xxiii, taken from *Buddhism in Translation*, Henry C. Warren, Harvard University Press, 1896, p. 385.

² Frazer, J. G., *op. cit.*, 2d ed., vol. I, p. 33.

discriminate, then the distinction has no application to the mental processes involved in savage magic.

Although I feel confident in affirming that Frazer's classification needs completion, I do not claim that the following one is adequate.

1. *Principle of Repetition*.—Something that has happened once is likely to happen again. A successful arrow will meet with further success, and one that has failed with further failure. No idea of a telepathic power is involved here.

2. *Principle of Transmission of an Effect from one Object to Another*.—Sympathetic Magic. An action taking place upon an object will take place also upon another object when the two objects are connected with each other in the mind of the magician. The connections may be of several kinds. I mention three of these: (a) The objects bear a likeness to each other (association by similarity): injuring the likeness of a thing injures the thing itself. (b) The objects have been or are in contact (association by contiguity): whatever is done to a tooth once belonging to a person will happen to the person himself. A variation of this form of magic is seen in the custom of rubbing oneself with a part of a powerful and courageous animal in order to acquire these traits. (c) The objects have been in the relation of cause and effect: cooling the arrow which has inflicted a wound will prevent inflammation of the wound.

In this class of magic an attraction or a telepathic influence is exerted between objects.

3. *Principle of Efficiency of Will-Effort*.

Other systems of classification are of course possible. A classification according to the nature of the Power involved in the magical operation and the relation of this Power to the magician appears to me to have considerable merit, so I add it here.

Class I.—Practices in which there is no idea of a Power belonging to the operator or his instrument, and passing thence to the object of the magical art. To this class belong many instances of so-called Sympathetic Magic,¹ many of the taboo customs; most modern

¹ Hang a root of vervain around the neck in order to cause a tumor to disappear; as the plant dries up, so will the tumor. If the fish do not appear in due season, make one of wood and put it into the water. Keep the arrow that has wounded a friend in a cool place, so that the wound may not become inflamed.

superstitions,—those, for instance, regarding Friday, the number thirteen, horseshoes, planting when the tide is coming in. In these instances the effect is thought to follow upon the cause without the mediation of a force passing, let us say, from the magician to the wooden fish placed in the stream and thence to the living fish. An illustration of this class of magic has already been given in the old lady's belief that good luck would come to a household as the result of sparrows having fallen down the chimney. The gambler who believes in his "luck" does not usually conceive of it as a Power in any true sense of the word. Several facts drawn from child life, which point to this same conclusion, will be noted presently.

Divination by casting lots or otherwise, when a spirit or god is not supposed to guide the cast, may be included here as a subdivision. The aim of divination is to secure an item of knowledge for the magician, while the other practices of this class are calculated to produce effects of some other kind. But in neither case does there exist the idea of a Power mediating between the thing sought and its antecedent.

Class II.—Non-personal Powers are believed to belong to the magician himself, or to particular objects, such as the magician's instruments, and to pass from these into other objects, or to act upon them so as to produce certain effects. If the magician himself possesses this force, he does not think of it as identical with his "will," or even as intimately connected with it.

Howitt relates that some native Australians begged him not to carry in a bag containing quartz crystals a tooth extracted at an initiation ceremony. They thought that the evil power of the crystals would enter the tooth and so injure the body to which it had belonged.¹ Many charms have a potency of this nature, while others have an animistic significance; that is, they involve the action of spirits, and so do not belong here. Eating the fat of a brave and strong animal, or rubbing oneself with it, in order to gain

¹ *Journal of the Anthropological Institute*, vol. XIII (1884), p. 456, quoted by Frazer.

courage and power, is an act belonging to this second class, as are also most cases of Contagious Magic.

There seems to be among all peoples a stage of development at which a Power like that described above is conceived clearly enough to be given a name; it is called by some tribes in North America, for instance, *Wakanda*, and *Mana* in Melanesia. This variously named non-personal Potency is the efficient cause of by far the greater part of the magical practices.

Class III.—Will-Magic. This includes the cases in which the magician feels that his will-effort is an efficient factor. Under this head usually fall spells, incantations, and solemn curses. A man who says to the magic spear, "Go straight and kill him," feels no doubt that by these words, in which quivers his whole soul, he directs the spear on its errand of death.

When discussing the origin of non-personal Powers, we saw how early man's attention is directed to his will-efforts, and how very soon he attempts to turn his "will" to account in the magical way. Among the North American Indians, sending forth one's thought and will is a common practice. Miss Fletcher tells us that, "When a race is taking place, a man may bend his thoughts and his will upon one of the contestants . . . in the belief that this act, this 'sending of his mind,' will help his friend to win."¹ In this and similar cases the will-power itself seems to perform the magical deed; while more commonly, perhaps, the spell or incantation "carries" one's will to another person, who is then compelled to act according to the desire of the magician.

The importance of this class of magic is so great that Marett has raised the question as to whether an accompanying spell is not an indispensable part of "perfect" magic;² and F. B. Jevons follows him in connecting magical power in general with the sense of one's own energy.³ In my opinion, this exercise of the will is the characteristic of only one class of magic. In magic as well as in religion,

¹ Fletcher, Alice C., *Notes on Certain Beliefs concerning Will Power among the Sioux Tribes*, *Science* (New York), N. S., V, 1897, pp. 331, 334.

² Marett, R. R., *The Threshold of Religion*, pp. 52 *et seq.*

³ In the chapter on the origin of the idea of non-personal power, I have already argued against the view that will-magic is the primary form of magic.

we must, it seems to me, admit several independent origins. What follows will, I hope, be conclusive on this point.

In this attempt at classification, I would not give the impression that the conceptions of the savage are clear and definite. On the contrary, I hold them to be hazy and fluid. What appears to him impersonal at one moment may suddenly assume the characteristics of a spirit. *Mana*, for instance, although usually an impersonal force stored in plants, stones, animals, or men, at times takes on truly personal traits. One should not be surprised to meet with cases that belong to several classes. The following is a good instance of the mingling of will-magic with other types. "The ancient Hindoos performed an elaborate ceremony, based on homeopathic magic, for the cure of jaundice. Its main drift was to banish the yellow color to yellow creatures and yellow things, such as the sun, to which it properly belongs, and to procure for the patient a healthy red color from a living vigorous source, namely, a red bull. With this intention, a priest recited the following spell: 'Up to the sun shall go thy heart-ache and thy jaundice; in the colour of the red bull do we envelop thee! We envelop thee in red tints, unto long life. May this person go unscathed and be free of yellow colour! . . . Into the parrots, into the thrush, do we put thy jaundice, and furthermore, into the yellow wagtail do we put thy jaundice.' While he uttered these words, the priest, in order to infuse the rosy hue of health into the fallow patient, gave him water to sip which was mixed with the hair of a red bull; he poured water over the animal's back and made the sick man drink it; he seated him on the skin of a red bull and tied a piece of the skin to him. Then in order to improve his colour by thoroughly eradicating the yellow tint, he proceeded thus. He first daubed him from head to foot with a yellow porridge made of turmeric or curcums (a yellow plant), set him on a bed, tied three yellow birds, to wit a parrot, a thrush, and a yellow wagtail, by means of a yellow string to the foot of the bed; then pouring water over the patient, he washed off the yellow porridge, and with it no doubt the jaundice, from him to the birds. After that, by way of giving a final bloom to his complexion, he took some hairs of

a red bull, wrapt them in gold leaf, and glued them to the patient's skin."¹

II. THE ORIGINS OF MAGICAL BEHAVIOR

The idea of non-personal Powers is no more synonymous with magic than the idea of great, unseen, personal beings is synonymous with religion. If there is to be a magical art, ways and means of using the Power must be produced. How did the apparently endless variety of magical practices come to be? Most of them will be accounted for by the following principles of explanation. They are of unequal importance, but each accounts, it seems to me, for a class of magic.

(a) Children often amuse themselves by making prohibitions and backing them up with threats of punishment. "If you do *this*," they say, "*that* will happen to you." The "*this*" and the "*that*" have usually no logical connection; nor does the child have any thought of a particular power or agent meting out the punishment.

It is important to remember in this connection that what is done in the make-believe spirit by one person is often taken seriously by another, independently of any empirical verification. A little girl, seven years of age, was told that killing a snail would cause rain. She immediately accepted the statement, and rational arguments did not take the idea out of her head. How many of the senseless superstitions of the savage arose in this way we shall never know. It seems probable, however, that many of the commands, precautions, and prescriptions in the life of the savage have had this origin; for there is frequently no logical connection between the deed forbidden or prescribed and the thing to be secured. I have in mind certain taboo customs, parts of initiation ceremonies of the Australians,² regulations governing hunting, and the like. A good instance of the last is found among the Central Eskimo: certain kinds of game must not be eaten on the same day; none of the deer's bones must be broken during skinning; and bits of the animal must be buried in the ground or placed under stones. In

¹ Frazer, J. G., op. cit., 3d ed., vol. 1, p. 79.

² Spencer and Gillen, *Native Tribes of Central Australia*, London, 1899, chap. VII-IX.

many cases a fuller knowledge would undoubtedly disclose reasons of utility, real or imaginary, for these magical practices; but that this would be true in every instance seems an unjustifiable assumption. The fact that the savage is usually ready with reasons for his behavior is no proof that these reasons lie at the basis of the practices. The explanations may be afterthoughts.

(b) It seems good psychology to hold that certain magical practices originated in threats of untoward happenings made for the purpose of preserving things vital to the life and prosperity of the tribe,—for instance, the authority of the chief, and the sanctity of the marriage relation. The magical beliefs which enforce continence on the part of the wives of men engaged in war appear to have had this origin. The punishment may be anything which is regarded as efficacious. In Madagascar conjugal fidelity is enforced by the threat that the betrayed husband will be killed or wounded in the war; among the indigenous tribes of Sarawak, the belief is that the camphor obtained by the men in the jungle will evaporate if the women are unfaithful; while in East Africa, the husband will, in the same eventuality, be killed or hurt by the elephant he is hunting.¹ The high sanction which the requirements of social life give to beliefs of this kind is readily understood.

The mental attitude out of which these beliefs arose need not be regarded as a deliberate intention to deceive the women. One should bear in mind the half make-believe, half serious attitude of children in their intercourse with one another. Yet I do not think it impossible that beliefs of this sort have originated in purposive deception. Spencer and Gillen² relate of the most primitive people known to us, the Arunta of central Australia, that the adult males rule the women and children by means of a bogie called *Twanyirika*.

(c) The motive which leads civilized people to make vows may account for certain magical practices. One of the original impulses of human nature seems to be to try to avoid a catastrophe or to secure advantages by promising to do something which would

¹ Frazer, J. G., *op. cit.*, 2d ed., vol. 1, pp. 29-31.

² Spencer and Gillen, *op. cit.*, p. 246, note 1. See also *The Northern Tribes of Central Australia*, pp. 491-492.

gratify the person who has control over the event. This motive in its cruder form is a desire to do something meritorious in order to deserve immunity from danger. Customs of continence may have had the origin mentioned above, or they may have arisen from the women's efforts to do something praiseworthy, so that the life of their husbands might be preserved and their success insured.

(d) Other types of magical behavior have their origin in the spontaneous response of the organism to specific situations. In states of excitement the liberated energy must find an outlet in movements. To restrain every external sign of intense emotion is unendurable. By the bedside of a sick person one loves, one must do something for him. The "expression" of the excitement is not altogether at random. It takes place according to certain principles.¹ For instance, it is a common fact that even men of culture when under stress of emotion act in the absence of the object of their passion as if it were present. A man grinds his teeth, shakes his fist, growls at the absent enemy; a mother talks fondly to her departed babe and presses it to her breast. The less a person is under the control of reason, the more likely is he to yield to such promptings.

If a happy coincidence were to lead to a connection between such behavior and success in war, these spontaneous actions would become magical, that is, actions performed in the belief that they are of assistance to the warriors. But coinciding fortunate events are not necessary to the establishment of the connection in question. It is psychologically probable that the desire in the mind of the

¹ Compare Irving King: "In innumerable cases they [magical and religious acts] can be shown to be primarily the natural reaction of the psycho-physical organism, almost its mechanical reflex, in situations of strain and relaxation, or to such conditions as require practical adjustments of some sort." *Op. cit.*, pp. 179-188.

In attempting to explain the bodily movements which accompany emotions, Darwin set down three principles, two of which should be taken into account in the consideration of the origin of magical behavior: the principle of actions due to the constitution of the nervous system; and the principle of serviceable associated habit. Charles Darwin, *Expression of the Emotions in Man and Animals*, pp. 28 ff. These principles become, in Wundt's treatment of the matter, the principle of the direct modification of innervation, the principle of the association of related feelings, and the principle of the relation of the movements to sense-representations. W. Wundt, *Physiologische Psychologie*, 5th ed., vol. I. II pp. 286-296.

person during the spontaneous activities will lead to a connection between these and the realization of the desire. It is worth while to dwell a moment longer on this possibility. I had occasion to discuss above certain dancing ceremonies. I attempted there to account for the magical dances of the women while the men are at war as due in their original form to a spontaneous expression of restlessness and excitement. Duration and repetition of the excitement would favor its expression in coördinated, intelligible movements—mimicry of fighting, for instance. If now there appears a sense of necessary connection between mimic fighting and success in war, what was a mere spontaneous expression of excitement becomes a magical practice. This step is not impossible, for if, while the dancing goes on, the wish for the success of the warriors is uppermost in the minds of the women, the dancing will probably come to be regarded as a condition of success. This last step would be no more than an expression of the well-known law of association: two things that have been together in the mind tend to recall each other. Thus forms of behavior arising as a release from emotional tensions gradually assume definiteness and become means of exercising magical influence, quite independently of any experimental proof.

Several of the numerous varieties of so-called Sympathetic Magic, particularly the widespread practice of doing to an effigy that which one would like to do to the original, can be accounted for by the addition to the former principles of the following law of mental action. Objects resembling each other become associated in the mind, so that the mind tends to pass from one to the other. Like objects may become to some extent equivalents in mental operations. The fact that the satisfaction to the person laboring under the excitement of anger or any other emotion increases with the similarity of the object upon which he wreaks his vengeance to the person really intended, was probably discovered by chance and led to the making of images and effigies for magical purposes.

(e) In the preceding modes of origin, movements and behaviors first appear independently of any magical intention, and afterward acquire a magical significance. But the magical principles soon became disengaged from magical practice. At this point a new chapter opened in the history of the magical art. Magic no longer

arose only by chance, but new forms were created deliberately. From this moment there must have been a tendency to treat, according to more or less definite magic principles, every difficult situation.

Here belong most of the numerous practices that may be classed under the heading "like produces like." That "like produces like" is a law of nature expressed everywhere about us. Cold, for instance, produces cold, and fire engenders fire. The frequent spreading of infectious diseases among vegetables, animals, and men seems quite sufficient to suggest this belief. The attention of the savage would naturally be drawn very early to that relation, because of the many striking and dangerous forms it takes. Now, as he is quite unable to distinguish among the different agencies involved in the various experiences of this sort, he cannot draw the line between the "likes" that really produce "like" and those that do not; hence his very strange expectations. And as it is often impossible to obtain or manipulate the objects possessing the quality desired, the whole comes to be replaced by a part, or even by a symbol, which is treated as if it contained the power of the whole. For example, eating or wearing a part of a courageous or powerful animal makes one bold or strong, or protects from danger; rubbing the chin of a young man with a rat's totem makes the hair grow, etc.

Another origin of the same class is suggested by an interesting observation made by Sully.¹ A little girl thought that making her hair tidy would stop the blowing of the wind. The wind disheveled her; conversely, putting her hair in order would make the wind cease. Similarly some children imagine that since the wind produces whistling sounds, whistling will produce wind. The second of two successive events is thought to be able to reproduce the first.

In attempting to demonstrate the priority of magic to religion, Frazer writes: "Magic is nothing but a mistaken application of the very simplest and most elementary process of the mind, namely, the association of ideas by virtue of resemblance or contiguity,

¹ Sully, J., *Studies of Childhood*, 1896, p. 80.

while religion assumes the operation of conscious or personal agents, superior to man, behind the visible screen of nature. Obviously the concept of personal agent is more complex than a simple recognition of the similarity or contiguity of ideas. . . . The very beasts associate the ideas of things that are like each other or that have been found together in their experience. . . . But who attributes to the animals a belief that the phenomena are worked by a multitude of invisible animals or by one enormous and prodigiously strong animal behind the scenes?¹ It is undoubtedly true that the mind of man tends to pass from one object to others similar or present at the same time; but this psychological fact does not in itself account for magic. The mind of animals is regulated in like manner. In the spring the sight of a feather makes the bird "think" of nest-building, and the smell and sight of the master's coat probably brings the master to the dog's mind. Yet animals do not practise the magical art. This fact shows the insufficiency of "a simple (mistaken) recognition of the similarity and contiguity of ideas" as an explanation of the origin of magic. If an animal had had his attention drawn to the color of carrots and jaundice, he might observe the color likeness between them; and also "coat" and "master" might follow each other in a dog's mind. But in order to treat the coat as he would the master, or to eat carrots for the cure of jaundice, the dog must have, in addition to the association, the belief that whatever is done to the coat will be suffered by the master, and that the eating of carrots will cure the disease. The existence of these ideas, together with their motor and affective values, makes magic possible. Frazer seems to have overlooked this fundamental difference between mere association of ideas and the essential mental processes involved in magic. This difference may be further illustrated by the instance of a dog biting in rage the stick with which he is being beaten. He is indeed doing to the stick what he would like to do to the man; but in attacking the

¹ Frazer, J. G., *op. cit.*, 2d ed., vol. I, p. 79. Oldenburg (*Die Religion des Veda*, Berlin, 1894) was first, I believe, in holding to a pre-religious magical stage of culture. But it is Frazer who first made a clear separation, not only between magic and religion, but also between magic and the belief in spirit-agents.

stick he does not think that he is injuring the man. His action is blindly impulsive, while the form of magic in question involves the purpose of inflicting injury on something else than the stick and the belief that the injury is actually done.¹

If magical actions cannot be deduced simply from the principles of association, they can at least be classified according to the kind of association they illustrate. For although the various ideas brought together in magic, in a relation of cause and effect, are frequently said to have come together by "chance," some of the conditions under which they have in fact become connected are expressible in the universal laws of association; namely, association by similarity or contrast, by contiguity or spatial opposition, and by emotional congruity or disparity. Whenever magical acts have been classified, it has been mainly with reference to the kinds of association involved in the mental processes. But every kind of activity involving mental operations falls in some of its relations under the laws of association, hence these classifications are relatively unfruitful. I have attempted, therefore, to group magical practices according to a factor of greater significance, namely, the nature of the power involved.

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¹ Cf. R. R. Marett, *From Spell to Prayer*, *Folk-Lore*, vol. xv (1904), pp. 136-141, reprinted in *The Threshold of Religion*, pp. 44-48.

DISCUSSION AND CORRESPONDENCE

METHOD IN THE STUDY OF TOTEMISM

Is there any human institution which can be safely called "Totemism"? Is there any possibility of defining, or even of describing, Totemism? Is it legitimate—is it even possible, with due regard for "methodology" and logic—to seek for the "normal" form of Totemism, and to trace it through many protean changes, produced by various causes, social and speculative? I think it possible to discern the main type of Totemism, and to account for divergences.

Quite the opposite opinion appears to be held by Mr A. A. Goldenweiser in his "Totemism, an Analytical Study."¹ This treatise is acutely critical and very welcome, as it enables British inquirers about totemism to see themselves as they appear "in larger other eyes than ours." Our common error, we learn, is this: "A feature salient in the totemic life of some community is seized upon only to be projected into the life of the remote past, and to be made the starting-point of the totemic process. The intermediary stages and secondary features are supplied from local evidence, by analogy with other communities, or 'In accordance with recognised principles of evolution' [what are they?] and of logic. The origin and development, thus arrived at, are then used as principles of interpretation of the present conditions. Not one step in the above method of attacking the problem of totemism is logically justifiable."²

As words of mine are quoted in this trenchant passage, I take up the gauntlet thrown down by the young American methodologist. I mean to defend the method of my own studies and to examine the merits of that practised, or preached, by Mr Goldenweiser. But first I must explain that Mr Goldenweiser apparently objects to any search, at present, for a single starting point of totemism. Mr Frazer has, at different times, selected different starting points. I have remained constant to one, namely the adoption or acceptance by early human kindred groups, of the totem names, animal, vegetable, or others. Mr

¹ *Journal of American Folk-Lore*, April-June, 1910.

² Can Mr Goldenweiser need a reply? Does he not know, *e. g.*, how change from female to male descent works in totemic evolution?

³ *Loc. cit.*, p. 280.

Goldenweiser asks, "Would not Lang admit that other features may also have been the starting point?" If he means that totemism may have had different starting points in, say, Australia, Africa, Melanesia, and America, I answer, "No!" and will later give my reasons. If he means, "Will I admit that totemism may have begun at some one other starting point than that which I have chosen" (the acceptance or adoption by kindred groups of totem-names), I answer, "Certainly! I will grant *that*, if you will tell me what starting point *you* choose, and sketch for us the processes of advance from your starting point. If your starting point seem the better, if your hypothesis colligate all the facts more successfully than mine, I am your obliged disciple."

Mr Goldenweiser does mention three starting points, adding "or what not." But I want to know "what" or "which" starting point, not "or what not." His three starting points I considered, and found them vague and unworkable. In one case the starting point was post-totemic (the myth of "descent from an animal," used by some totemists to explain why they are totemic). The other two, "animal taboos," or "primitive hunting regulations," themselves needed hypotheses to explain their origin, and before proceeding to hypotheses it would be necessary to know *which* animal taboos and *which* hunting regulations Mr Goldenweiser has in his mind as perhaps feasible "starting points." As a matter of fact, Dr Roth, in his *Ethnology of Northwest Queensland*, has tried to make economic taboos on certain articles of food (which he finds in his region of Australia) the starting point of a wide theory. But great as is the debt of Anthropology to this very exact inquirer, I am not aware that his views have been accepted, and I have not been able, from his starting point, to make any progress toward a theory of the evolution of totemism.

Dr Roth's suggestions are commented on by Mr Frazer.¹ Dr Roth found, not that each totem-kin in his tribes abstained from a given list of edible objects (indeed he seems to have observed no totem-kins) but that the members of each matrimonial "sub-class," four in all, were bound to such abstinence. The tabooed animals vary in each sub-class. Wind and rain are tabooed to sub-class Wungko, — no serious deprivation! Mr. Frazer inclines to suppose (and the suggestion is most probable) that, as the four sub-classes are certainly a later addition to the matrimonial law of the two phratries, the list of tabooed animals in each case represents the class of the totem-kins that once were in a sub-class. To each totem-kin, *as such* (as a general rule),

¹ *Totemism and Exogamy*, vol. 1, pp. 136, 137, 522-524, 526-528.

only one object, namely its totem, is tabooed. Let the later sub-classes swamp the earlier totem-kins and every person in each sub-class is tabooed from all the objects which were the totems of its totem-kins. I put the curious and anomalous case (the explanation is only a working hypothesis) in my own words. It is plain that I cannot look for the origin of totemism in a later and non-totemic institution, that of the sub-classes, unknown except in Australia, and there a distinct refinement upon the widespread institution of exogamous phratries. I have considered every suggested possible source or origin of totemism, and find that I can work out a series of hypothetical processes of development only from the association of a given animal, plant, or what not, with a given exogamous kin. Grant me that much, and I think I can trace all the known varieties of development to special causes. (Reports of totemism from Western Australia are not distinct enough, as yet, for treatment.) I cannot expect Mr Goldenweiser to oblige me by showing how a theory which accepts any one of his three suggested starting points, or any other, would work, because he does not (if I understand him) believe that totemism had but a single starting point. In him this is natural, for he appears to hold that totemism is not what he calls "an integral phenomenon," that it has nothing which can be styled a "type", and that no law of development from a type of totemism can as yet be discovered. This is what I conceive him to mean.

As against Mr Frazer's views, or my own, Mr Goldenweiser advances an argument which, to any one not intimately familiar with the subject, seems final and crushing. He exhibits a tabular view of the "features" of totemism and exogamy (or rather of the features of two various societies in which totemism and exogamy exist) in the tribes of North-western America, and in the Arunta nation of central Australia. The differences, not the resemblances, he says, are "great and numerous," and they must appear very convincing to the general reader. I present Mr Goldenweiser's tabular form, and add comments in brackets.

TOTEMISM IN BRITISH COLUMBIA AND CENTRAL AUSTRALIA

	BRITISH COLUMBIA	CENTRAL AUSTRALIA
<i>Exogamy</i>	Totemic phratries (Tlingit)	Phratries
	Totemic clans (Haida, Tsimshian, Northern Kwakiutl). [By Haida "clans" we are to understand "phratries"; by Haida "families" we are to understand "clans."]	Classes
		Totem clans [None] (generally not independent exogamous units)
		[Not exogamous at all in central Australia]

<i>Totemic names</i>	Phratrises (Tlingit) (Haida) 2 of 4 clans (Tsimshian) Clans (Northern Kwakiutl)	All totem clans [No totem clans in central Australia]
<i>Taboo</i>	Non-totemic taboo, common; to- temic, absent	Numerous totemic and non- totemic taboos
<i>Descent from the totem</i>	Absent (Tlingit, Haida, Tsim- shian) Occurs (Kwakiutl) and farther South	Universal [Unknown. Incarna- tion is not descent]
<i>Magical cere- monies</i>	Not associated with totemism	Intimately associated with to- temism
<i>Reincarnation</i>	Not associated with totemism	Intimately associated with to- temism
<i>Guardian spirits</i>	Intimately associated with to- temism	Not associated with totemism.
<i>Art</i>	Actively associated with to- temism	Passively associated with to- temism
<i>Rank</i>	Conspicuous (in individuals and groups)	Absent
<i>Number of totems</i>	Small	Large

Mr Goldenweiser compares the totemism of his American tribes with that of the Australian Arunta. Now, *their* case is absolutely unique. Among the Arunta nation certain speculative ideas, common to many northern and northwestern Australian tribes, *plus* an absolutely unique superstition connected with manufactured objects, *churinga nanja*, have caused an unparalleled abnormality in their totemism. Theirs is as unlike that of any other Australian tribes as that of these Australian tribes is like the totemism of the Wyandots or the Menominees. It is rather Mr Goldenweiser's task to explain the amazing resemblances in the totemisms of peoples so remote from each other as certain tribes of America and Australia than my business to explain why the totemism of the Arunta differs so widely from that of the Tlingit or the Haida. But these differences are of easy explanation. The resemblances cannot be accounted for by fortuitous coincidences.

My own notion of method demands that we should not only examine two totemisms widely different, but also totemisms closely resembling each other in parts of the world very remote from each other. Two forms of totemism, say Wyandot and Menominee in America, Barkinji and Ta-tathi in Australia, also present differences. My method would consider the social and artistic conditions of both sets of tribes and ask, Have not different social conditions expressed themselves in the differences of the totemic development? Concerning the social conditions themselves we have in each case the best possible evidence.

What is illogical, unscientific, and illegitimate in this method? If we take the Christianity and church government of, say, the sixth to the eighth centuries, on the continent and in Scotland and Ireland we find very considerable differences. Then examining the social conditions of Ireland and those of France, Italy, and Spain, we find great differences, and we see precisely how the social conditions of Ireland produced the differences between the Irish and Roman forms of Church government.

Before entering into details I ought first to excuse myself for "projecting into the remote past a feature salient in the totemic life of some community," and "making it the starting point of the totemic process." I did not select "a feature salient in the totemic life of *some* community" (such as the "conceptional totemism" of the Arunta), but I chose a feature salient in *all* totemic communities, namely, the animal, vegetable, and other such names of totem kindreds. If an exogamous kindred has not a totemic name, why are we to call the kindred "totemic"? One may be able to prove historically that it once was totemic, but if it have no totem and totem name, it is not totemic now.

Mr Goldenweiser, if I understand him, thinks that here I am arguing in a circle. He says, "A simple way of proving that exogamous clans with totemic names are the essentials of totemism is to define totemism as exogamous clans with totemic names."¹

This is simple indeed! It is arguing in a circle. But here I am not trying to "define totemism." I am asking, "What is a totemic clan?" How can I call a clan "totemic" (however exogamous it may be), if it has neither totem nor totem name?

Mr Goldenweiser himself insists that this is a thing which I must not do: I must not call Tlingit clans "totemic", as they usually have not totemic names (or, now, totems). In my opinion, as we shall see, the exogamous clans of the Tlingit tribe in America have recently been totemic. But according to the latest information (taken in 1904) the clans have not totems now, nor even totemic names. This is a source of joy to Mr Goldenweiser, because, if these exogamous Tlingit "clans" have not totemic names, that makes a difference between them and most, not all, Australian "clans". Therefore I must not cheat by calling the Tlingit "clans" "totemic", or "possessors of totemic names"—and I abstain from so doing. The Tlingit are no longer totemists, but Mr Goldenweiser includes them in a survey of British Columbia totemism. Am I to accept as a totemic "clan" a "clan" without a totem name when it suits my adversary; and not when it does not suit him? I fail to see

¹ Quoted from a personal communication.

how I can know an exogamous clan to be totemic when it has neither totem nor totemic name.

I am very far from saying that every exogamous "clan" is now, or must once have been, a totem-kin. When I say "totem-kin" I mean a kin with a totem and a totemic name,—to do so is not to argue in a circle. I add that every totem-kin (or clan) known to me is exogamous, for the Arunta magical sets, or clubs, with totems, are not "kins", and know it; and in the case of the Narrang-ga of York peninsula some of the exogamous "clans" are still totemic in name while the others have ceased to bear totem names and take local names under circumstances perfectly well known.

Mr Goldenweiser, objecting to my defining a totem-kin as a kin with a totemic name (though he will not let me call an exogamous kin without a totemic name a "totem-kin"), raises the question, How are we to style such exogamous *gotras* (or *gots*) in India as have not totemic names, while other *gotras* in the same people have totemic names? My answer is written, but would occupy too much space.

For these reasons I start from the totem name of the totem-kin as an universal feature of such a body; all such bodies (as far as I know) are exogamous, except the Narrang-ga and other peoples who are known certainly to have abandoned exogamy. (The case of the Kurnai and their *thundung* remains obscure; but how the Narrang-ga ceased to be exogamous is known with certainty.) Thus, looking for a starting point of totemism, I choose that universal feature, the totem name. For the origin of exogamy I look in another direction, believing that local groups of kin were exogamous long before they were totemic. As to my definition of totemism, I have come to something very like Mr Frazer's conclusion that, by way of definition, "we may perhaps say that totemism is an intimate relation which is supposed to exist between a group of kindred people on one side and a species of natural or artificial objects on the other side, which objects are called the totems of the human group."¹

One or two modifications I would make, and an addition. Thus I would say "When I speak of totemism I mean an intimate relation which is believed by certain peoples to exist between their human kindreds (real or supposed) on one side and a species of natural or (infrequently) of artificial objects on the other side, which objects are, by us, called the 'totems' of the human kindreds, while the human kindreds bear their names." I would go farther and add—"In all but

¹ *Totemism and Exogamy*, vol. iv, pp. 3, 4.

two or three cases known to us (which can be proved to be instances of departure from rule), the kindreds which believe in this intimate relation between themselves and an object, natural or artificial, have a law against marrying a person who stands in the same intimate relation to the same object." Mr Goldenweiser will probably say that my phrases are not a definition but a description. At all events they are intelligible, and explain the nature of the phenomena which I investigate.

All I have said is probably anathema to Mr Goldenweiser; is, he may say, "non-methodological" and most unscientific. His plan, we saw, is to draw up a table of totemism among the Indians of the Northwest of North America and another of totemism as it exists among the Arunta of central Australia, and to ask—how we can pretend to find totemism as an "integral phenomenon" when the Arunta may marry within their totem "clans" while the exogamous "clans" of British Columbia have sometimes no totem names?

I may state Mr Goldenweiser's case "for short" in the terms of a friendly critic, Dr Lowie, who writes that "he has been the first to show at length and with irrefragable logic, that totemism cannot be treated as an integral datum," and that his paper is "the prolegomena to all positive attempts at a sane interpretation of totemic institutions."¹ Hitherto, it seems, interpreters of totemism have neither been sane, logical, nor positive in their attempts.

Mr Goldenweiser's is "an American view," "based on methodological principles which are becoming the common property of all the active younger American students of ethnology." From them a decrepit British veteran must have much to learn.

Here follows Dr Lowie's summary of Mr Goldenweiser's way of doing battle. No doubt his summary is more fair than any which an opponent could construct. I add footnotes to Dr Lowie's intention.

According to the traditional view, totemism is an integral phenomenon which is everywhere essentially alike. Thus, in Frazer's latest work on the subject, *Totemism and Exogamy*, the burden of proof is explicitly thrust on the shoulders of those who question the identity of totemic phenomena in different quarters of the globe and who uphold the theory of convergent evolution.² In Part I of his paper, "Australia³ and British Columbia," Dr Goldenweiser has anticipated this challenge. He selects the series of features that are commonly regarded as

¹ R. H. Lowie, A New Conception of Totemism, *American Anthropologist*, N. S., vol. XIII, no. 2, 1911.

² I do not know how "convergent evolution" is defined. As a series of chance coincidences? A. L.

³ By "Australia," central Australia, the home of the Arunta, is meant; A. L.

distinctive of totemism, and compares the forms they assume in the two areas considered. The result is sufficiently striking. On superficial consideration, it appears that the [central] Australian totem group resembles the clan of British Columbia in the exogamic regulation of marriage.¹ But this resemblance is not significant; in both cases the exogamous character of the clan is not a primary but a derivative trait.² Because the clans³ are, in both areas, parts of the larger phratrie units, and because these phratries are exogamous, the totem clans must be exogamous, even though the clan, as a clan, may have nothing to do with exogamy.⁴ In other features, the totem clans of [central] Australia and British Columbia clearly diverge. In [central] Australia the social importance of the clan dwindles into insignificance as compared with that of the phratry; in British Columbia the clan is the social unit, *par excellence*. On the Northwest [American] Coast there is evidence⁵ for the development of the clans from village communities, such as nowhere exist in Australia. Finally, the American clans are graded as to rank—a condition likewise lacking in [central] Australian totemism. In the matter of clan names, what similarity exists is again of a superficial kind. In [central] Australia all clans are named from their totems; in British Columbia clans frequently derive their names from localities. But precisely where the American social divisions (phratries) are named after animals, we occasionally find that the eponymous animal is not identical with the crest animal,⁶ which is the one that corresponds, in religious function, to the Australian totem. If phratries are compared it is found that those of the Tlingit and Haida bear animal names, but that only a few of the Australian phratry names are definitely known to refer to animals.⁷ The view that the totemite is a lineal descendant of his totem is clearly developed in [central] Australia; on the Northwest Coast, on the other hand, there is a fundamental belief in human descent: the crest animal is one which has in some way been associated with the human ancestor of the group. Nevertheless, the author points out, there are myths in which the association is very close, and, in one group of traditions, the ancestor is the crest animal transformed. These instances, instead of militating against the author's point of view, constitute in reality strong evidence in support of it. For the myths in question result from the reaction of the guardian-spirit concept upon the basic belief that human beings have human ancestors. Now, the guardian spirit concept is practically foreign to [central] Australia. What

¹ The central Australian "totem group" has no more to do with marriage than with the tariff. A. L.

² Here is boldly assumed the hypothesis that phratries preceded exogamous "clans". The central Australian "clan" is not exogamous at all. A. L.

³ In central Australia, among the Arunta, there are no "clans". A. L.

⁴ Nothing in this sentence is true about central Australia. There are no totem clans; each clan occurs in both phratries, now no so-called "clans" are exogamous.

⁵ I know no such evidence. A. L.

⁶ The "crest animal" has been juggled with by heraldic ambition. A. L.

⁷ The translatable Australian phratry names, with one probable exception, are animal names. Only a third of these names have been translated. A. L.

similarity there exists between the [central] Australian and the American myths is accordingly an ideal instance of convergent evolution. There remains the criterion of the taboo against eating or killing totems. Of this phase of totemic life [central] Australia remains the classical example; in British Columbia, on the other hand, not a single instance of totemic taboos has hitherto been discovered, though there is an abundance of taboos of non-totemic character.

A survey of the currently assumed symptoms of totemism in the two areas discussed thus reveals far-reaching differences. It would be artificial, however, to confine the comparison within the limits set by conventional definitions of totemism. If we wish to disabuse ourselves of the preconceptions expressed in these definitions, Dr Goldenweiser insists, we must not neglect to consider those cultural features which are empirically found in intimate association with the criteria generally recognized as totemic. In [central] Australia two elements have risen to so commanding a position within the totemic complex that each has been assumed as the essence and starting-point of [central Australian] totemism generically. These elements are the *intichiuma* ceremonies conducted for the multiplication of the totem animals, and the belief in the reincarnation of ancestral spirits.¹ On the Northwest Coast of America, analogous features are indeed found, but they are wholly dissociated from totemic institutions. A parallel condition of affairs is revealed in viewing the dominant traits of social life in northwestern America. The social life of the Kwakiutl is unintelligible without taking into account the groups of individuals sharing the same guardian spirit, while the circumstances incident thereto are dramatized in the dances of the secret societies.² In Australia guardian-spirits are rare, and, where found, are generally quite distinct from the totems; even when the two concepts do coincide, the guardian-spirit factor is of relatively slight moment. A second trait of special significance in the American area is the relationship of totemism to art, —the saturation of practically all decorative attempts with totemic motives, and the retroactive tendency to give, secondarily, a totemic interpretation to designs purely decorative in origin. This intimate connection is largely dependent on the quasi-realistic style characteristic of Northwest American art. In [central] Australia, where geometrical motives predominate, art has exerted but little influence on totemic life.

The empirical consideration of the totemic complex in the two typical regions dealt with thus establishes the *essential diversity of the phenomena compared*. [My italics.] The dominant motives of [central] Australian totemism are not the dominant motives of Northwest American totemism, and *vice versa*. What resemblances exist are either superficial or are functions of traits not directly associated with totemism. Here, however, the criticism might be made that totemism in the areas selected is not comparable because the American institution

¹ I do not know who is making either or both of these assumptions. Certainly I am guiltless of both. A. L.

² The "tradition" is a *post-totemic* myth-explanatory of the origin of totemism. A. L.

represents a far later stage of development. "The totem", as the author puts it in anticipation of this stricture, "has become attenuated to a crest, to a symbol; the living, flesh and blood relationship with the totem animal has been transferred into the realm of mythology; and, naturally enough, the taboo on the totem animal has dwindled away and finally disappeared." Dr Goldenweiser's answer is unmistakably clear. "To a retort of that character, I would answer that we may safely assert that there is not one phase of human culture, so far represented in an evolutionary series of successive stages of development, where the succession given has been so amply justified by observation of historic fact as to be safely adopted as a principle of interpretation" (p. 22). The evidence from Northwest America must thus be admitted as coordinate with that from [central] Australia. . . .

Taking the essential proportions here I do say that "totemism is everywhere *essentially* alike," because by *essential* I mean only the existing association between exogamy and the totem name and kin, whether the kins be or be not regimented in phratries. I take no keep of other features "commonly regarded as distinctive of totemism." Thus the Bruces may taboo spiders; "the dog," in the Gaelic proverb, "is the friend of the Macleans" (so J. F. McLennan told me), the Campbells bear the (non-heraldic) badge of the salmon,¹ but none of these clans is a totem clan; nor is any exogamous; and the clans of the Narinyeri and Euahlayi are certainly totemic, though they kill and eat their totems (the Euahlayi, after a simple rite). I take no keep of the different myths by which totemists explain totemism,—as by descent from the animal, incarnation of a *vatapa* or *erithipa* of the animal; an ancestral adventure with the animal, an intervention of a guardian spirit: the presence of the soul of an ancestor in the animal; the allotment of the animals to the kins by Baiame, or any other fable. Nor do I think it essential to totemism that totem kinsmen should use armorial bearings representative of the animal, or honour it (Wyandot and Tlingit) by making their personal names bear reference to the animal of the clan. When an exogamous clan takes its name from a locality, it is not totemic at all; though in America, Australia, and British New Guinea, I can easily prove that such locally or descriptively named clans have recently been clans of totem names.

Thus my reply is considerably shortened.

I often feel doubtful as to whether or not I understand the kind of English used by Mr Goldenweiser and Dr Lowie: highly abstract as it is. Let us try to translate into correct terms Mr Goldenweiser's rather

¹ Their crest is the head of the boar that slew their ancestor. Diarmaid, but crests did not come into heraldry before the fourteenth century.

dogmatic utterance, "There is not one phase of human culture" (may I assume that totemism is a phase of human culture?) "so far represented in a series of successive stages of development. . . ." 47λ. Does this, in the concrete, mean that a series of successive stages of development cannot be traced in totemism? Is the process by which in some of the Dieri and neighbouring tribes of *female descent*, men give their totems to their sons, not traceable? Is the resulting stage in which a man with the *inherited* maternal and *given* paternal totem may not marry a woman, in other respects eligible, if she be of the man's father's totem, not traceable? When, next, we find all northern Australian tribes of *male descent* revering almost equally the paternal and maternal totem, and inheriting property in the female line, but marrying out of the paternal totem only, can we not trace a series of successive stages of development from descent in the female to descent in the male line? These northern tribes are in touch with no tribe of female descent and contaminated by none.

Again, if we find American tribes which have or had totems, and in which members of each kin have badges representing each his totem, and take each their personal names from their totem, are we forbidden to see a further stage of this process when, elsewhere, kins with wealth and rank have animal badges associated more loosely with the kins, because through stress of heraldic vanity and desire of a multiplicity of "crests," one clan usurps the badges of other clans? Meanwhile, in these clans, many, if not all men, take their personal names from that of an animal specially favoured by their clan. Are we forbidden to suppose that the second set of usages is one in a series of successive stages from the first? I understand Mr Goldenweiser's Method to taboo any such supposition. I do not know how any man can hold this view. Taking American totemism generally we see that the very word "totem" (an Ojibway word) does not mean what, none the less, we all call the "totem" of a kin, namely the actual animal associated with the kin; but means the symbol, or device, a work of art representing that animal.¹ Are we to call no clans "totemic" unless they possess such devices, whether in realistic or conventionalised art?

Is it not, again, manifest that the artistic representation of the clan-animal in a painted or sculptured device is necessarily later in evolution than the acknowledged relation of a kin to the animal represented? Is it not equally certain, on Dr Swanton's evidence, later quoted, that the custom by which a rich clan usurps the animal device of a poor clan,

¹ Morgan, *Ancient Society*, p. 165.

perhaps in the opposite phratry, is later than the practice by which in other tribes each clan remained faithful to its own animal device?

I understand Mr Goldenweiser to answer these questions in the negative: to say that we have no historical evidence (and that no other evidence is good enough) for the succession of the processes mentioned. In Northwestern America we see "the saturation of decorative art with totemic motives." We see quite as clearly the "saturation" of totemism with heraldic art—art displayed in the "crests" or badges of the "clans": these crests represented the special animal of each clan, originally, though,—for historical reasons explained by Mr Goldenweiser's leading authority, in the case of the Tlingit tribe,—the passion for heraldry, as we shall see, has robbed some clans and the phratries of the sole possession of their animal emblems, and upset the original arrangement.

I understand Mr Goldenweiser to mean that we may be aware, (A) of American tribes, say the Hurons, who had totems of each kin, devices or symbols of each totem, and the usage of taking personal names from the totem. We may also be aware, (B) of tribes with no totem kins, but with kins which, *usually*, have each a special regard for a given animal; *usually* have badges of that animal; and *often or usually* take their personal names, in each case, from that animal's name. But we are not to be allowed to assume anything so unhistorical as that stage B is one of a series of developments from stage A. This excessive strictness, I think, is not "scientific": I could give it another epithet.

The "successive changes" in this case, I think, are: (1) "Clans," each having an animal with which it is in intimate relation. (2) Art is employed to make works of sculpture representing each such animal for the decoration of members of its clan, for ornaments in their houses, and for the posts beside their houses. (3) The usurpation by members of wealthy clans of the badges or emblems of other clans, and the phratry not their own. (4) A great deal of consequent confusion as to the ownership of these clan badges or emblems: wealthy clans seizing all or many, poor clans having none, and the animal badges being conveyed into the phratry to which they did not originally belong.

The process by which the clan badges got out of the original into the opposite phratry is not that by which Arunta totems are still getting out of the "right" into the "wrong" matrimonial class. But the result is the same, and if the Tlingit clans were known by totemic names, a Tlingit, like an Arunta, might marry a woman of his own totem name, but not of his own phratry: for the distinctive animal badges are now claimed by clans in *both* phratries, in some cases.

Anxious to be economical of space, I must now invite the reader to consult Dr Swanton's account of the Tlingit tribe.¹ Holmberg's account of 1856, used by Mr Frazer in *Totemism and Exogamy* (vol. III, pp. 265-268), is not accessible to me, and I must not cite it at second hand. He is reported by Mr Frazer to give the phratries as Raven and Wolf, each containing clans *which are named after various animals*. If so, here we have, in 1856, exogamous clans of totemic names. I think it is not denied, at least, that each clan had its animal crest? If so, each clan had a special connection with its crest animal. Moreover it is plain from Dr Swanton's report that "theoretically the emblems used on the Raven side were different from those on the Wolf or Eagle side."²

Thus, if we may go so far as to say that the crests represented each a special animal associated with its own clan, the clans were once totemic; and the same totem could not and did not appear in both phratries, naturally, as both clans and phratries were and remain exogamous. Moreover in each phratry is a clan (*teste* Holmberg), of the name of the phratry, Wolf in Wolf phratry, Raven in Raven, or a clan bearing the crest of either animal. This condition of affairs is now much broken up, because, as Dr Swanton shows, by exhibitions of wealth and liberality at potlatches, members of rich clans usurp crests and names really in the right of other clans, and even in the phratry not their own. The process is historically demonstrated. It follows that the possession by a man of this or that animal badge or name is now no safe indication of what woman he may legally marry.

In consequence, perhaps, of this loss of exogamous value of the animal name, or animal badge; and also in consequence of the now settled life in towns or villages, the exogamous clans are no longer named after the clan animal, but bear descriptive names, or names of localities, real or legendary, just like the exogamous clans of the Massim of British New Guinea. What *their* clan names originally meant is unknown, but two are named after two species of snake, and one after a tree. Meanwhile the Tlingit "often" do what the Wyandot men did invariably, —take their personal names from the special animal of their clan in each case (as Egyptian and Semitic names usually refer to a god, and Highland names often to a saint). Meanwhile too, though Tlingit clans now very seldom have totemic names, the names of the "house groups" of

¹ *Twenty-sixth Annual Report of the Bureau of American Ethnology, 1903-1905* (published in 1908).

² Swanton, *op. cit.*, p. 415. I have carefully analyzed Dr Swanton's report, but have not space to show how far it corroborates Holmberg as reported by Mr Frazer.

each clan are more frequently totemic than not, while even house-names are coveted and contested, and confused.

I ask the reader, Do not the Tlingit (whose clans are no longer totemic) exhibit undeniable signs of having been totemic, and exhibit the processes due to wealth, rank, and heraldic usurpation of names and crests through which they have ceased to be totemic? If they were totemic then they resembled the Australian tribes of the Upper Darling and its *Hinterland*, in the following respects: (1) They had phratries of animal names—Raven and Wolf, Eagle Hawk and Crow. (2) They had in these phratries exogamous clans. (3) Each clan had a totem animal (or a badge representing an animal). (4) Before heraldic usurpations among the Tlingit, no animal crest of a clan appeared in both phratries, as the totem animal of the Australian tribes is in both phratries. (5) Each phratry had within it a totem-kin of its own name, Wolf in Wolf phratry, Raven in Raven phratry, Eagle Hawk in Eagle Hawk phratry, Crow in Crow phratry.

All this is certain, unless it be maintained by Mr Goldenweiser that Tlingit animal names and crests, and animal named phratries, and the presence of the clan animal or badge in the phratry of its name, and the *non*-presence of any totem animal or badge in both phratries, did not arise in totemism, and "came otherwise";—"but how it matters not," as William of Deloraine said. If Mr Goldenweiser takes that line, I have no more to say. But if he does not take refuge in a *non liquet*, then does his method forbid him to tell us how so many resemblances between the totemism of the Australian Mukwara and Kilpara tribes (with female descent like the Tlingit) arose, if the two totemisms did not come from a common starting point, and pass through similar processes of development?

Are we to explain it by "convergent evolution," and does this phrase mean "through a series of flukes"? I have cut my argument down to the bone, and have rather reluctantly excised a study of the totemism of the Massim of British New Guinea, who have exogamous clans assumed to be named after "real or hypothetical localities," "house groups," phratries; each including a clan of its own name; while the clans have each three or four totems none of which appears in the linked or opposite phratry. The Massim are a mixed and migratory people, Papuo-Melanesian, and with them, though they have female descent, respect for the paternal totem has gained much ground on regard for the totem of the mother.¹ This case, with local variations, has resemblances both

¹ Seligmann, *The Melanesians*, 1910.

to the Mukwara Kilpara model, and to that which is now decadent among the Tlingit. Are the resemblances purely fortuitous?

My method may be terribly illogical and unscientific, but, even so, it has enabled me to find out facts that had been unknown or ignored. My hypothesis required that Australian phratry names should have totemic names. I proved that one-third of the known Australian phratry names,—the third which can be translated,—have totemic names, with one rather doubtful exception, the "light blood" and "dark blood" of the Euahlayi.

My hypothesis required that each Australian phratry should have in it a totem-kin of the animal of the phratry name. I proved that in many instances where our information was full and native names of the totem animals were given, the case was as, according to my hypothesis, it ought to be. It is not wholly a bad method which leads to discoveries. May the method of Mr Goldenweiser be equally fortunate!

I hope presently to send to Mr Goldenweiser my hypothesis of the origin of all these things, including phratry names. But he will see with horror that I "seize on prominent features in the totemisms" of three most primitive Australian "nations," to project them into the past of all totemists with the system of two intermarrying exogamous phratry names of animal names. "How bad, and mad, and sad this is," but "it fills the bill." The hypothesis works—that is, things may have occurred as I suppose; if they did the results must have been the state of affairs with which we are familiar.

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ANDREW LANG ON METHOD IN THE STUDY OF TOTEMISM

MR LANG's broadside attack is always formidable. Having survived its impact, I propose to consider some of his criticisms. Mr Lang's bracketed comments on my Table¹ reveal a terminological misunderstanding. By "Central Australia" I did not mean "Arunta"; following the precedent of Spencer and Gillen, I used the term to cover all the tribes from the Aranda and Loritja in the south to the Anula and Mara on the Gulf of Carpentaria. Not all of the statements in the Central Australia column of my Table are true of all of the above tribes, any more than all of the statements about British Columbia

¹ Totemism, an Analytical Study, *Journal of American Folk-Lore*, 1910, p. 229.

apply to all of the Northwest Coast tribes. In justice to Mr Lang, I may add that I feel in part responsible for the misunderstanding, which could have been avoided had I specified the tribes to which each statement applied, as I have done in the British Columbia column.¹

Mr Lang makes certain positive assertions about the nature of the totemic complex and the origin of totemism. Before we turn to these, a brief restatement of the main positions of the second part of my *Totemism* may prove useful. Having, in Part I, dealt with two totemic complexes, I then take up some of the individual features, such as exogamy, taboo, etc., and analyze them from an historical and psychological point of view. The provisional conclusion expressed in the summary of Part I is thus confirmed; the features prove to be independent ethnic phenomena; each feature, moreover, may develop from a number of distinct "origins" and may vary in its psychological content. Now, if the individual features are not necessarily totemic, in origin or nature; if, in addition, totemic complexes differ widely in the number and character of their totemic features, then a totemic complex can no longer be regarded as an organic, that is, genetic unit, nor can it be defined by the enumeration of any set of totemic features. Thus the concept is reached that in totemism we deal with a phenomenon of association of various ethnic features, of features essentially heterogeneous in their natures, and independent in their histories. The associations, moreover, which constitute totemic complexes are of a type known in modern ethnology as convergent developments. For the totemic complexes, the final products of totemic processes seem to reveal a far greater degree of resemblance, both objective and psychological, than either the totemic processes or the remote totemic origins.

It will thus be seen that I do not close my eyes to far-reaching similarities in totemic organizations the world over. Mr Lang would have me "explain" these similarities. "It is rather Mr Goldenweiser's task," writes Mr Lang, "to explain the amazing resemblances in the totemisms of peoples so remote from each other as certain tribes of America and Australia, than my business to explain why the totemism of the Arunta differs so widely from that of the Tlingit and Haida" (p. 371). But my primary purpose was not that of explanation. I hope I have made clear that the comparison between one American and

¹ When quoting Dr Lowie's exposition of parts of my *Totemism* Mr Lang adduces further bracketed criticisms of certain statements as to clan exogamy, etc., which are not true of the Aranda (p. 375). In a letter of Feb. 29, 1912, Mr Lang refers to this point. He writes: "Any mistake I made through supposing that Central means of the Centre should be deleted." No further reference need thus be made to the matter.

one Australian totemic complex was made in order to bring out the marked variability in objective and psychological content of totemic complexes as actually found. Evidence from elsewhere served to support this conclusion. Having thus established the position that the specific content of totemic complexes cannot be regarded as their essential characteristic, I then tried to ascertain whether there were not some common feature in all totemic complexes, a feature that could be regarded as definitely symptomatic. I eventually found such a feature in the circumstance that in all totemic organizations we find a differentiation of a group into definite social units—clans—within the limits of each of which the so-called totemic features are socialized. The specific content of the features in each clan is different, but the form they assume is strictly identical in all the social units of the group, which units may thus be described as *equivalent totemic units* the aggregate of which constitutes a totemic organization. In *Totemism and Exogamy Defined: A Rejoinder*¹ I then expressed the belief that this tendency of "totemic" features for specific socialization cannot itself be regarded as a product of convergent evolution but must rather be conceived as a primary socio-psychological fact that may eventually prove to be the means by which the convergent developments of totemic complexes are achieved. Pending much more prolonged and elaborate investigation into the nature of totemic phenomena, all this must needs be very vague and unsatisfactory, but Mr Lang will realize that I am very far from making far-fetched attempts at finding differences where similarities are essential, or from denying the fundamental unity of the totemic problem, notwithstanding the genetic heterogeneity of totemic complexes.²

My attitude toward Mr Lang's positive interpretations of totemism flows naturally from the above theoretical positions. "I think it possible," says Mr Lang in the opening paragraph of his critique, "to discern the main type of totemism, and to account for divergences" (p. 368); and again, when referring to non-exogamous totemic clans: "They are deviations from the prevalent type of clans with totemic

¹ *American Anthropologist*, 1911, vol. 13, pp. 589-597.

² Mr Frazer in his *Totemism and Exogamy* has repeatedly emphasized the position that a differentiation of a group into clans with totemic features—I should say into "equivalent totemic units"—is a condition *sine qua non* of "totemism". In some other sections of his work, again, he has turned his back on that proposition. The first to draw attention to this side of totemism was Léon Marillier in his memorable articles on "La Place du Totémisme dans l'Évolution Religieuse" (*Revue d'Histoire des Religions*, vs. 36 and 37. Cf. e. g., vol. 37, p. 393).

names plus exogamy. They are exceptions to the rule, and, as such, they prove the rule. They are divergences from the type, and, as such they prove the existence of the type from which they have diverged."¹

In other places he speaks of exogamous clans with totemic names as "universal" and "normal" features of totemism and of totemism as characterized by exogamous kins bearing totemic names.¹ I have in *Totemism* touched but indirectly on this subject of the comparative permanence or variability of the different features of totemic complexes. In principle, I here agree with Mr Lang. I should not, with him, regard exogamy and totemic names as "universal" features of totemism,—Mr Lang is, of course, familiar with the "exceptions,"—but I should endorse the statement that clans with totemic names are, in an overwhelming majority of cases, exogamous. The two traits may thus be called "normal" features of totemism, and totemism may be said to be "characterized" by them. In a purely objective and descriptive sense, we might even use the term "type" in this connection. But would these terminological niceties carry us any farther in the understanding of totemic phenomena? Decidedly not. With or without these terms, we do not get beyond the purely descriptive fact that exogamy and totemic names are the most permanent of the features of totemism. For it does not at all follow from the above considerations that totemism is an "integral phenomenon existing in many various forms," nor that "there is 'an organic unity' of the features of totemism, of these two features, the essential features." In order to justify these statements we should be able to demonstrate that it is of the nature of exogamous clans to have animal names, and that it is of the nature of clans with animal names to be, as such, exogamous. This demonstration cannot be made. Exogamous clans may have local names (Haida, Tlingit) or names derived from taboos (Omaha), or nicknames (Crow), or names that are collective forms of the names of ancestors (Kwakiutl), and be none the worse for it. Animal-named clans, on the other hand, whenever their exogamy is derivative, cannot be regarded to have, in their capacity as clans, anything to do with exogamy. From this point of view wide areas where totemic clans are exogamous units, as in Africa and India, would have to be sharply differentiated from other wide areas, such as Australia and part of North America, where totemic clans are associated with the division of a tribe into two exogamous halves. In the latter instances a special investigation would be required in each individual

¹ Personal communication.

case, whether to show that the clans had at a former time been independently exogamous, or that notwithstanding their inclusion in wider exogamous groups, the clans as such also constituted exogamous units. Thus a totemic organization even when reduced to its simplest terms—exogamous clans with totemic names—would still have to be regarded as a complex, constituted by the coexistence of two psychologically and historically independent features. There would be no "integral phenomenon," no "organic unity."¹

This brings us to another point, also in part terminological. "How can you know that a clan is totemic," exclaims Mr Lang, "if it is not called by a totemic name?"² And again: "I start, then, from the totemic names because, no totemic name, no totemic 'clan'!" Or again, "How can I call a clan 'totemic' (however exogamous it may be) if it has neither totem nor totem names?" (p. 372).

I am unaware of having ever maintained that a clan without a totem could be called "totemic". As to "totemic" names, I believe that the numerous Bantu clans with totems should be called "totemic", although their totems are non-eponymous. The same applies to the Tlingit.³ On the other hand, would it be wise to apply with Mr Lang the word "totemic" to a clan with naught but a "totemic" name, we should rather say, animal or plant name? To my mind, this use of the term "totemic" would not only be unwise but misleading. If one goes over the list of exogamous *gotras* of a district in India, for instance, he will find that some of these have animal names; others, names derived from a female ancestress; still others, perhaps, archaic names of unknown meaning. Is it justifiable to call the *gotras* with animal names "totemic", while refusing this designation to the other *gotras*?⁴ Such discrimination would, of course, imply that in case of the animal-named *gotras* we were dealing with a peculiar phenomenon requiring a special term. But this natural inference would be erroneous, for an animal name is in itself in no sense more interesting or significant than a local name, or a nick-

¹ When Mr Lang writes: "For the origin of exogamy I look in another direction, believing that local groups of kin were exogamous long before they were totemic," he tacitly endorses the principle above enunciated.

² Personal communication.

³ Mr Lang says I "insist" that the Tlingit clans should not be called "totemic". I have never, to my knowledge, held this opinion. Thus all Mr Lang has to say on this point is directed against a man of straw.

⁴ Mr Lang refers to this point when he says: "My answer is written but would occupy too much space." I hope Mr Lang will soon find occasion to let us know his attitude on this question.

name, or any other kind of name.¹ It will thus be seen, I trust, that we may not acquiesce in Mr Lang's use of the term "totemic" without making confusion worse confounded.

The question of totemic names reintroduces the much abused social organization of the Tlingit. In this matter, the difficulties, complexities, and puzzles are largely of Mr Lang's own making.² The discussion is needlessly complicated by the introduction of the data as given by Mr Frazer.³ In the tabulated representation of the Tlingit organization, for instance, given by Mr Frazer "on the authority of Mr F. Boas" and reproduced by Mr Lang, Mr Frazer misunderstands Dr Boas. Dr Boas' list is incomplete,⁴ but so far as it goes, corroborates Dr Swanton's conclusion. First he gives the totems [crests] of the Tlingit phratries; then the gentes [clans] of the Stikin tribe are enumerated. Some of the native names are translated as house or local names; it is pointed out that the raven occurs four times as the crest of four gentes [clans] with different native names which therefore cannot mean "raven".

I shall now once more give a very brief outline of the Tlingit organization. The Tlingit are divided into 14 geographical groups. These groups, the Tongas, Sanya, Henya, etc., have nothing to do with the social divisions of the Tlingit but merely comprise "the accidental inhabitants of one locality." The main social division is into phratries: Raven and Wolf (also called Eagle in the northern part of the Tlingit country). A small third division, the Nexa'di, belongs to the Sanya geographical group. No marriage within the phratry is tolerated. The large majority of marriages are concluded between the two phratries, but both may also intermarry with the Nexa'di. Descent is maternal. Each of the two phratries comprises a number of clans.⁵ These clans,

¹ What instances like the above really suggest, is a study of names and naming. Thus animal names together with local names, nicknames, etc., would constitute one group of facts deserving closer scrutiny. The animal names of clans, on the other hand, would also have to be studied in their relation to animal names given to other units, such as tribes, religious societies, individuals, houses, constellations. The "doctrine of naming" is not, as it was once thought to be, coextensive with totemism, but it constitutes a fascinating, albeit neglected, phase of primitive life and thought. Mr Lang is one of the few students to whom we are indebted for having thrown some light on one side of this vast subject.

² Personal communication.

³ *Totemism and Exogamy*, vol. iii, p. 266.

⁴ *Reports of the British Association for the Advancement of Science*, 1899, p. 821.

⁵ As all members of a clan always belong to one phratry, they cannot intermarry. Thus the clans are not exogamous units. Their exogamy is derivative in the same sense in which the exogamy of the Dieri clans is derivative.

which with some few exceptions have local names, are social divisions. A man is born into the clan of his mother; the clan membership, that is, is quite independent of all considerations of locality. Swanton, who, by the way, holds no "theory of what a Tlingit 'clan' really is", but merely describes what he finds, enumerates 28 clans of the Raven phratry, and 26 clans of the Wolf phratry. Of the Raven clans ("Raven" is not the name of the clans), one occurs in four geographical divisions, one in three, one in two; each of the remaining 25 clans occurs only in one locality. Of the Wolf clans, one occurs in four geographical divisions, two in three, one in two; the remaining 21 clans occur only once. This distribution indicates that the clans are also local groups, which does not mean, of course, that all members of any clan are restricted to one locality; but it does mean that definite localities or groups of houses are associated with individual clans, and that the clansmen are aware of this fact. Here one or two concrete examples may prove useful. Thus the people of the Téqedl clan (phratry Wolf) occupy four houses in the Tongas geographical division, three in the Sanya, one in the Hutsnuwu, and one in the Yakutat geographical divisions. The Chilkat geographical division, on the other hand, comprises three clans of the Raven phratry: the Luqá'xadi (one house), Ganaxa'dl (six houses), and Nucékaš'yl (?); and three clans of the Wolf phratry: the Kā'gwantān (eight houses), Taqéstina' (two houses), and Daqláwe'dl (two houses). Mr Lang's conjecture that the Tlingit clans formerly had animal names is not supported by any evidence whatsoever. It is highly probable, on the other hand, that the local segregation of the members of a clan was in former times much more pronounced than is at present the case. Each clan has a tradition in which the origin of the clan is traced to some locality often different from the one now occupied by the clan. If a clan is distributed in several geographical groups the several sections of the clan all have the same tradition as to their common origin in some definite locality.¹ What these old conditions actually were, we can only

¹ That traditions often reflect the state of society in which they arise, Mr Lang admits, but he has often and vigorously denied that "myth making" had anything to do with historic fact. That the contrary may sometimes be true appears from the following instance: On pp. 114 and 115 of his Haida monograph Swanton gives two tables in which the crests of the Raven and of the Eagle families are represented in statistical form. An inspection of the Raven crests reveals the fact that the Raven families fall into two groups. In the first group, the killer-whale and the grizzly-bear crests appear while the rainbow is absent; in the second group, the killer-whale and rainbow appear while the grizzly-bear is absent. When this result is compared with the genealogy representing the legendary history of the Haida families (op. cit., p. 76), all the families of the second group are found to be the descendants of the Lawn-Hill

conjecture, but what they may have been can be gathered from the instances of the Lillooet or the Bellacoola, who were once organized in village communities which subsequently became clans.

A few words are due to Mr Lang's theory of the origin of totemism. Mr Lang refers to my "very brief" and, I may add, thoroughly inadequate, criticism of that theory. It was not my purpose to give, in *Totemism*, an exhaustive critique of totemic origin theories. I there contented myself with making some general remarks about the methodological weakness of all such theories. Opportunity may soon be given us to deal *in extenso* with Mr Lang's own "vision" of totemism; hence I will not do so in these pages. One more point, however, deserves notice. Mr Lang refers to the passage where I suggest "animal taboos, or a belief in descent from an animal, or primitive hunting regulations, or what not" (p. 369), as possible starting points of totemism, on a par, of course, with Mr Lang's animal names of exogamous local groups. He objects to each one of my suggestions (including even "what not") as possible alternatives to his own theory. Taboos "are imposed for many known and some unknown reasons, and not all totem-kins taboo the totem object," while "the belief in descent from an animal is only one out of many post-totemic myths explanatory of totemism," etc. Hence, these features cannot, in Mr Lang's opinion, be conceived as starting points of totemism. If we endorse Mr Lang's assumption of the monogenetic character of totemism, his objections to my alternatives are valid. But Mr Lang realizes that I do not accept this assumption (p. 368). If so much be granted, taboos, belief in descent from animals or plants, hunting regulations, etc., could be regarded as possible starting points. But if we admit the plausibility of other "origins", the methodological error in proclaiming one origin as the true one, no matter how plausible, becomes at once apparent. In anticipation of misapprehension, I must add that all I mean in speaking of some one feature as the origin of totemism is that the particular feature happened to appear first in the development of a given totemic complex. The totality of the historic process was in all cases much more complex than would appear from any of the current totemic origin theories.

branch of the southern branch of the Middle-Town people. Thus legend and objective classification tell the same story. Some of the Eagle families can also be arranged in two groups. The first group is characterized by the appearance of the eagle, beaver, scalpin, and frog crests. In the second group the halibut and cormorant appear in addition, while the frog is absent. And again the results are found to agree with the traditional history of the Eagle families (op. cit., p. 93): group one descends from Labret-Woman, group two from Property-Making-a-Noise.

including Mr Lang's. This explains why I do not attempt to construct a series of causally linked stages of development from any of the suggested "origins", as, for instance, Mr Lang has attempted when using the acceptance of animal names by local groups as his starting point. It will be admitted that at each point in Mr Lang's totemic evolution where something happens, something else might also happen, from either "inner" or "outer" causes. In other words, the assumption that the one definite thing happened, and no other, is always artificial and devoid of historical value, although the assumption may be rendered plausible by finding instances among existing totemic peoples where this one thing actually happens. The greater the number of such assumed happenings, the more artificial and arbitrary is the hypothesis; and with each new assumed happening the probability that the hypothesis represents an *actual* series of occurrences decreases at a tremendous ratio. Mr Lang quite misunderstands me when he assumes that I object to all reconstruction of developments. I should, on the contrary, insist on the necessity of such reconstructions in limited cultural areas.¹ What I do object to is the generalizing of such reconstructions and their application as interpretative principles to other cultural areas, on the assumption that interpretations that applied in one instance would also apply in all other instances. Without specifically commenting on the reconstructions suggested by Mr Lang (p. 379), I fully endorse the principle involved so long as such reconstructions are used as interpretations of the material from which they are derived. I do not wish to imply that our reconstructions will never lead to any generalizations or that missing links in the cultural development of one area could in no case be supplied from a parallel instance observed elsewhere; but I insist that, in the present state of our knowledge, all such procedures require special justification in each individual instance and should not be based on the assumption of a general similarity of developments, totemic or otherwise.

Such was the intended meaning of the "highly abstract" (but why "incorrect"?) passage from my *Totemism* cited and criticized by Mr Lang. An instance given by Mr Lang well illustrates the above principle. It reads: "The processes by which the clan badge got out of the original into the opposite phratry (among the Tlingit) is not that by which Arunta totems are still getting out of the 'right' into the 'wrong' matrimonial class. But the result is the same." Here we have an instance

¹ Cf. my treatment of the processes of cultural diffusion and assimilation among the tribes of the Pacific Northwest (*Journal of American Folk-Lore*, 1910, pp. 281-287).

of convergent evolution,¹ as well as an illustration of how dangerous it may prove to interpret a phenomenon in one cultural complex by means of the results reached in the study of another.

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TRACES OF THE STONE AGE AMONG THE EASTERN AND NORTHERN TRIBES

ONE of the most frequent complaints of the archeologist is that the descendants of our native Indian tribes have no knowledge whatever of the arts and manufactures of the stone age. This is a charge which, while to a great extent correct, is nevertheless not quite so sweepingly true as many believe, and the searcher seldom fails to find some recollections of stone-age industries.

It is constantly asserted by certain students that the historic Indians did not make stone arrow-points, but used bone, antler, or some other substance to the complete exclusion of stone. Archeological and documentary evidence aside, there are numerous definite traditions to the contrary among our Eastern tribes. I shall quote a few that have come to my personal notice.

In 1904 there were several Seneca Iroquois still living on the Cataraugus reservation in western New York who remembered the process, and one, William Blueskye, had himself made and used stone arrow-points as a boy. He still retained the art, and chipped rather clumsy points from flint pebbles by means of a pebble hammerstone alone, not using a bone flaker. He said that it was difficult to get flint that would chip properly, as most of the stone found on the surface was too dry. Freshly quarried flint was better for the purpose. He claimed that the Seneca formerly boiled the flint for several days, along with medicine herbs, to make it flake more easily.

This latter statement is corroborated by old Menomini, who say that the fat of large animals was boiled with the stone. When Hoffman wrote,² he spoke as though the Menomini of his time were still cognizant of the art, but it has now passed into oblivion, except in the instance

¹ I trust Mr Lang is no longer in doubt as to the meaning of the term "convergent evolution". For a somewhat detailed treatment of this topic I should refer him to Dr Lowie's article "On the Principle of Convergence in Ethnology" (*Journal of American Folk-Lore*, Jan.-Mar., 1912).

² Hoffman, *The Menomini*, 14th Ann. Rep. Bur. Amer. Ethnol., p. 256.

mentioned. I have collected several ancient stone arrows, picked up and shafted by the Menomini. In each case the head of the shaft was made to swell laterally to take the point, a feature that may be observed in Iroquois models of a similar nature in the collection of the American Museum of Natural History. The Winnebago, Siouan neighbors of the Menomini, claim no knowledge of the manufacture of stone points. It is quite possible that they never made them.¹

In some localities the Eastern Cree of the Hudson's Bay region used chipped stone points made by percussion. In others they preferred points and blades rubbed from slate, like the flat-rubbed blades found in New England and western New York, and still used among the Eskimo. One interesting feature was the presence in former times of a semilunar scraper of rubbed slate, exactly like the Eskimo woman's knife. Their crooked knives were made of beavers' teeth, and so were little chisels for work on snowshoes.

The Eastern Cree still hold in memory the days when they used grooved stone axes. The blade was set in a handle, split at one end to fit the groove, and the haft was then bound above and below the split with deerskin. Fire was not used by the Cree as an aid to chopping. Stone celts were fastened in wooden handles, the haft being at right angles to the blade as in an adze. These were used to chisel ice. The Cree of Moose Factory say that some axes, used especially to cut firewood, were made of moose, deer, or caribou shoulder blades, or beaver rump bones.

The Saulteaux Ojibwa used stone celts, hafted like Cree grooved axes. They were considered hard to make, and were very scarce, usually only one being in the possession of a single family.

Stone celts are well remembered by the Seneca, who have told me how they were hafted in a pierced handle, and used, with fire, held in check by clay swabs, as the active agent, in cutting down trees and in other wood work. The stone tool was used to hack away the charcoal. Mr M. R. Harrington has described a hafted stone celt collected from the Cayuga.²

The writer recently purchased a round, flat, water-worn pebble from a Menomini woman, who claimed that it was formerly used to polish and sharpen bone awls. It is the counterpart of other rubbing stones I have found on prehistoric sites in New York, New Jersey, and Massachusetts. Bone awls are out of date, but I have collected several metal awls hafted

¹ Radin, *Some Aspects of Winnebago Archeology*, *American Anthropologist*, 1911, vol. 13, no. 4, p. 536.

² *American Anthropologist*, 1909, vol. XI, no. 1, p. 86.

in elaborate carved bone or antler grips, from both Menomini and Winnebago.

One point in a recent controversy between two well-known writers on anthropology hinged on whether or not bone celt-like objects are used by the Minnesota Ojibwa. Just north of Minnesota, in Canada, I have collected bone beaming-tools made from the shin-bones of moose, caribou, and deer, and used in removing the hair from deerskin; and toothed and plain fleshers and scrapers, some of the plain fleshers having celt-like blades. Among the Eastern Cree all these types are found, and, in addition, a small celt-like bone implement used as a wedge to push back the hide is employed in skinning deer. Possibly there is some truth in the oft-repeated tradition which calls the stone celt a "skinning knife"; very thin celts certainly could be so used. The Cree toward Labrador formerly used stone and bone celts fastened perpendicularly to long wooden handles to chisel ice.

In addition there are still in use among the Winnebago and Menomini long, thin bone needles with a central perforation, made from the ribs of some large animals such as the buffalo, and designed for sewing together reeds to make wigwam mats, while smaller needles for weaving snowshoe webs are found among the Menomini, Ojibwa, and Eastern Cree. I have also obtained a bone hook and a hollow bone needle-case from the latter. Beads made from hollow bird-bones, cut in sections, exactly like those found on prehistoric Eastern sites, may still be seen among Winnebago and Menomini, and from the Ojibwa of Sac Seul I have collected one small needle, made of the perforated penis bone of the martin and used in sewing garments.

Charlie Sabattis, the well-known half Abenaki Adirondack guide, once showed me the spot where his father had shot his first moose with a bone-headed arrow. Both Sabattis and Blueskye, the Seneca, assured me that antler arrow-points were easily made by boiling the prongs until they were soft enough to cut "like cheese." Later, when at work with Mr. M. R. Harrington in excavating a very early historic Erie village and burial site¹ at Ripley, Chautauqua county, New York, we found numerous points of antler, discarded cores, and long curling shavings of the same material, which must have been removed from the prongs with a stone knife or scraper, and this was only possible if the antler was in a "cheery" state.

¹ The work on this site was afterward completed for the New York State Museum by Mr. A. C. Parker, and furnished the material for his bulletin entitled "An Erie Indian Village and Burial Site," *Bulletin 117, N. Y. State Museum*.

Mr M. R. Harrington has collected several stone gorgets of both the simple and double-holed type among the Canadian Iroquois and Delawares. The single-holed form was used generally as a pendant by Iroquois owners; the double-holed variety served as a hair ornament among the Delawares.

Stone pipes are still used, to my personal knowledge, by the Eastern Cree, Ojibwa, Winnebago, Menomini, and Tuscarora. Doubtless, however, the modern method of manufacturing these things is different from that practised long ago.

Pottery is no longer made by the Iroquois, and was never used by the Eastern Cree, who preferred stone vessels pecked into shape. The Seminole of Florida still remember when earthenware was used, and doubtless the old people know how to make it. Ojibwa from Cat Lake, north of Sac Seul, Canada, told me that they very recently made stone vessels and earthenware, for which they employed the coil process.¹ My Menomini notes tell a different story.

"Pottery vessels are said not to have been made or used for over one hundred years, yet the memory of the process still lingers. They were made from selected clay which was pounded and mixed with pulverized shells for tempering. When the clay was properly compounded, more water was added, and it was kneaded into a stiff paste which was plastered by the hands over a large ball of basswood bark twine, leaving one end uncovered. The clay was next smoothed off with a stick and the incipient vessel was set in the sun to dry. In fact, sunshine was considered such a necessary factor in the drying process that no one ever made pottery on a dull day.

"When the clay coating was dry, the potter took hold of the end of the ball of twine which protruded from the opening left for that purpose, and, pulling it, unwound the ball within and left the earthen shell. Fresh clay was then daubed over the rough inside and the vessel was scraped smooth with a stick, outside and in. The kettle was next sized with a coating of finer clay, and ornamented with incised designs made by a sharpened stick. Holes were then bored near the rim to receive a bail of basswood bark. The vessel was dried again, and it was then ready for use without further treatment. It was not fired, but became baked by the flames when in use.

"It is said that bowls and spoons were made of clay before wood came into use. The first iron and brass kettles of commerce are thought to have been thrown up on earth to sacred dreamers by the Underneath Powers; probably this is a survival of a tradition in vogue when pots were made of earth, the property of the Gods Below."²

If I had chosen to quote from others, a mass of evidence might have

¹Alanson Skinner, Notes on the Eastern Cree and Northern Saulteaux, *Anthropological Papers of the American Museum of Natural History*, vol. ix, part 1, p. 130.

been brought out that would have prolonged and extended this list far in excess of its present length, but I have given only some of the examples that have come to my personal knowledge in the course of a relatively brief experience. One fact that most archeologists do not seem to realize sufficiently is that stone was not the only material worked by the aborigines of the "stone age". Take, for example, the bowl carved from a knot, the woven bast or hemp bag, the specimen of porcupine quillwork—each is also a survival of the "stone age". As a matter of fact, the use of stone was comparatively limited. Edged tools, hammers, ornaments, and some weapons were the principal articles made of this material, whereas the bulk of the property in the hands of the savage was constructed of wood, clay, skin, or fabric.

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EDUCATIONAL THEORIES

EDUCATIONAL theories are beginning to assert a claim upon Anthropology—with what legitimacy the future must decide. Almost a decade ago one of our leading pedagogues, Dr G. Stanley Hall, of Clark University, in his *Adolescence* pointed out the need of a special study of the education of the children of lower peoples. Dr Frank Spencer, in his *Education of the Pueblo Child*, has attempted such a study as President Hall advocates. Until the present, however, no educational treatise, so far as we are aware, has incorporated the educational régime of primitive peoples as part of its organic scheme. This is now attempted by Dr Irving King, Assistant Professor of Education in the State University of Iowa. Chapter II of his *Social Aspects of Education* (Macmillan Co., New York, 1912), treats, under the title of "The Social Origin of Educative Agencies," of "the education of the Pueblo child," and "the social nature of education as seen in primitive life," containing, at the end, a list of "references on primitive types of education." "From the point of view of moral character alone," he writes, "it is doubtful whether the educational activities of the higher races are as efficacious as those of savages." So far as social morality, interpreted as conformance with the prevailing ethical code, is concerned—the ideal in most systems of education—it seems *not* doubtful that the educational activities of the higher races are less efficacious than those of savages. Why have field-workers not interested themselves in this phase of savage life—seeing that it is one of the most important from the point of view of the

native himself who must somehow "secure the solidarity of the group" if it is to "maintain its *status quo*"? As the writer says: "In primitive society, especially, it would be impossible for a tribe to survive long if the education afforded its children were widely divergent from the needs of the life process. In some way they must learn to use the implements of the hunt and of warfare. They must learn those lessons of tribal custom and religion which will insure the stability and solidarity of the group. If the simple arts of a barbaric society were not in some way preserved in each new generation, that society would soon drop back to the level of brute life. Some form of education, then, however crude and haphazard, either conscious or unconscious, is necessary even for unprogressive peoples, that at least the existing level of culture may be retained."

"If there is any heresy that the dear Lord will pardon," writes Dr. G. Stanley Hall, "it is that of interpreting theology as anthropology." To "theology" he might have added "education", since all of his educational and psychological studies alike profess a wide anthropological basis. In his recent work on *Educational Problems* (1911) he is equally ardent in his claims of what Anthropology can do. "A little anthropology should have place in a real people's college," i. e., in the High Schools (II, 662).

In this monumental work on the broader and basic problems of education President Hall is forever reiterating the doctrine preached again and again in his *Adolescence*: viz., that the child recapitulates in its individual history the history of the race. To quote a page of *Educational Problems* (I, 602):

"It should be premised and never forgotten that from the standpoint of industrial education the recorded history of the race has not yet been utilized aright. Dewey's efforts in Chicago years ago to lead young children over the pathway of the history of labor were exceedingly ingenious and suggestive, even if there was only a limited adaptation of phyletic to ontogenetic. Paleolithic and Troglodyte periods hardly correspond to the stone-cutting or masonry of today. The so-called Bronze Age, so far as we know, is not very much represented in childhood. Possibly clay modeling and the elements of pottery belong rather early. It may be that the molding and hammering of lead and whittling belong here; and significant too are the lessons drawn from the first zests of children in joints, edges, strings, clubs, and things to strike with. The Nomad Age is better represented in truancy and runaways, and suggests excursions. The Hunting Age correlates with the sling, cross-bow, and fishing parson. No boy ever invented a boomerang. Domes-

tication is represented by pets, and perhaps by the horse school of California; it may be by keeping bees, pigeons, dogs, etc. In weaving, skin dressing and cloth making, as well as shelter, we doubtless have atavistic motivations from the tepee up. Play in general is the rehearsal in the midst of our own life of very ancient paleopsychic activities which belong earlier in the race. Thus, on the whole, I believe the very best possible practical field for the recapitulation theory is just at this stage, and that, therefore, we should find powers at our disposal, could we learn how to turn them on, that would enable us to develop before and perhaps a little into the teens the very best liberal and humanistic basis for later special training that industrial education can ever possibly expect to have." President Hall does not court anthropology half-heartedly!

As Tylor wrote a half century ago, it often happens that the highest intellectual effort of one period in our history comes down to be the child's play of a later time. Dr Hall would make the intellectual achievement of every earlier stage the preliminary training of every child.

Just what the experience of the race has been it might be difficult to say; and perhaps it would not be so easily discovered as the author implies. It would seem, for example, that the Negro boy would have to undergo a different training from his neighbors, to the north and east, simply because his ancestors of the race—*horribile dictu*—had (apparently) gone from the Stone age into the Iron and deprived succeeding generations of the benefit of a training in an omitted Bronze age of transition! This seems to be confusing the fact that the children must suffer for the sins of their racial ancestors to the fourth and fifth millenia with the justice of such an infliction. Indeed, it seems no different from training the criminal in keeping with the life of his criminal ancestors, near or remote, and the sensible after the manner of life of their senseless forefathers. Why start at Paleolithic and Troglodyte rather than "simian and probably arboreal"? (A theory should at least be consistent with itself.)

To take for granted and as not demanding proof the implied dogma that what somebody else, who happened to be our ancestor, did and thought, should be incorporated in our own training, is to ask us to accept History as the equivalent of Ethics. Indeed, as was pointed out shortly after the appearance of Hall's *Adolescence*, "the recapitulation theory, that each child in his growth passes in his mental and spiritual life through the successive stages of barbarism and civilization by which the race rose to its present position, however true it may be and useful in correlation of phenomena, is liable to lead, and . . . has already led to dangerous educational practices" (cf. *The Independent*, Nov., 1904).

It is difficult to see how ethnological data can furnish more than descriptive material. It does not give ideals—much less so since no individuals of different times and societies find themselves in exactly analogous circumstances—and without ideals, that is to say *desiderata* of some kind, education as signifying more than a record of influences, is meaningless.

Moreover, the analogy on which President Hall bases his pedagogic doctrine seems to us largely at fault. Savages are not children of nature, being quite as old as ourselves; nor are they analogous to the children of civilized people if only because the former live in an environment of their own making and active participation, whereas the latter live largely in an environment created and maintained by their elders and into which they are but slowly admitted. There may be even more serious cause of complaint with the pedagogical authority because of his constant tendency to take factual correspondences as *ipso facto* proof of historical connection. To be equally dogmatic and assertive, we may say that if boys congregate in predatory gangs, this by no means proves the predatory spirit to be a reverberation of some ancestral experience of the race. Surely at some point in evolution new characteristics have come in. Perhaps, too, more should be introduced. The goal may be away from rather than back to the ancestral stage. The converse must be established, not merely asserted. With this attempt must come a critical evaluation, and thus we shall be lifted, as educational theories should lift us, out of the what-is-and-has-been to the what-should-be.¹

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AMERICAN AND ENGLISH METHODS IN ETHNOLOGY

MR WALLIS' contribution to the "Discussion and Correspondence" pages (*American Anthropologist*, 1912, vol. 14, pp. 178-186) clearly establishes the point that Dr Rivers is not alone among his compatriots in repudiating the doctrine of unilinear evolution. The assumption that he stands by himself was based entirely on Dr Rivers' own statement as to the trend of thought among English anthropologists. It was hardly unnatural for an American reader to accept as authentic what the President of the Anthropological Section of the British Association had to say on that subject. Oddly enough, neither Mr Wallis nor his unnamed

¹ Mention may be made of the section on *Primitive Art*, in vol. 11, pp. 528-535, of Hall's *Educational Problems*.

correspondent takes Dr Rivers to task, but both swoop down with the charge of exaggeration and jingoism upon his guileless American reader. A reference to Dr Rivers' address, to which my letter was a rejoinder, must at once dispel this accusation. It was Dr Rivers who characterized the ethnological methods in vogue in different countries, and the whole point of my reply was that so far as America was concerned his characterization was incorrect. This is not denied by Mr Wallis. As for English anthropologists, I merely quoted verbatim Dr Rivers' statement that they had been "inspired primarily by the idea of evolution founded on a psychology common to mankind as a whole." Perhaps Dr Rivers will wince at Mr Wallis' revelations, but I cannot help remaining pachydermately unmoved under the charge of parochialism and chauvinism when all I have done is to take a British expression of opinion about British ethnology at its face value.

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INTERNATIONAL CONGRESS OF AMERICANISTS

THE eighteenth International Congress of Americanists was held at the Imperial Institute, London, from May 27 to June 4, 1912, Sir Clements R. Markham presiding. Delegates were present from thirty-one governments and fifty-seven institutions. Those representing the United States Government were: Dr Aleš Hrdlička, Miss Alice C. Fletcher, Prof. George Grant MacCurdy, Dr E. L. Hewett, Prof. George B. Gordon, Rev. C. W. Currier, Prof. Marshall H. Saville, and Dr Charles Peabody.

American Institutions were represented as follows: Columbia University, New York, Franz Boas; University of Pennsylvania, Eckley B. Coxe and George B. Gordon; Yale University, George Grant MacCurdy; Stanford University, V. L. Kellogg; Catholic University of America, C. W. Currier; American Ethnological Society, Franz Boas; Smithsonian Institution, Aleš Hrdlička; Anthropological Society of Washington, A. Hrdlička and Alice C. Fletcher; Academy of Natural Sciences, Philadelphia, Sir Thomas Lauder Brunton; Academy of Sciences, Davenport, Iowa, C. A. Ficke; American Philosophical Society, Franz Boas; Peabody Museum of Harvard University, C. Peabody, Alice C. Fletcher, and Zelia Nuttall; Brooklyn Institute of Arts and Sciences, Stansbury Hagar.

At the opening session addresses were made by the President, Sir Clements R. Markham, Sir William Osler, representing the Board of

Education, Alfred P. Maudslay (now Sir), Dr S. A. Lafont Quevedo, and Dr F. Heger.

The social and other functions connected with the Congress included a series of dinners given by Sir Clements R. Markham and Lady Markham at their home, a reception at the South Kensington Museum and a dinner at the Trocadero Restaurant, both given by the President and local committee of the Congress; a reception by Sir Richard Martin and Lady Martin; an "American Dinner" at the Lyceum Club (to meet the American Consul General, the Duchess of Marlborough, and others); and a reception by the American Ambassador and Mrs Whitelaw Reid at Dorchester House. Members of the Congress were also made temporary Honorary Members of the Royal Societies Club and the British Empire Club for the period of one month. An afternoon was devoted to the British Museum collections from the Americas, the guests being received by the Duke of Northumberland, Dr Charles H. Read (now Sir), and Dr T. A. Joyce. The principal excursions included visits to Cambridge and Oxford.

The Congress was noted for the large attendance and the unusually long program. The following papers were read:

Dr Charles Peabody: Archaeological Importance of the Recent Work of T. Volk in the Gravels at Trenton, New Jersey.

Dr J. B. Ambrosetti: A Fossil Skull from Argentina.

Prof. L. Capitan: Le paléolithique en Amérique; état de la question.

Miss A. Breton: An Implement of Paleolithic Type from Ancon, Coast of Peru.

Dr A. Hrdlička: Report on Ancient Man in South America.

Dr A. Hrdlička: The Ethnic Nature and Probable Origin of the American Aborigines.

Dr J. C. Tello: Trophing in Peru.

Waldemar Jochelson: The Aleut Language and its Relation to the Eskimo Dialects.

Dr W. Thalhitzer: The Four Skraeling Words (from Newfoundland), in Erik the Red's Saga.

Prof. Franz Boas: Notes on the Morphology and Phonetics of the Mexican Language.

W. H. Mechling: A Linguistic Map of the State of Oaxaca (Mexico), Based on Vocabularies Collected by Dr A. Peñafiel.

Dr K. Theodor Preuss: Das Verbum in der Sprache der Cora Indianer.

S. G. Morley: The Hotun, a Maya Chronological Unit.

Jonkheer L. C. van Panhuys: Observation on Numerals in a Carib Language.

Prof. J. F. Oliveira: The Cherentes—Indians of Central Brazil; Notes and Vocabulary.

Dr S. A. Lafont Quevedo: (a) Pronominal Classification of Certain South American Indians. (b) A Short Account of the Sanchez Labrador MSS. on the Ubayá Tongue.

A. Posnansky: El signo escalonado en las ideografías Americanas con especial referencia à Tihuanacu.

A. Posnansky: Esquema preliminar para la decifracion de las ideografías de la Puerta monolítica à Tihuanacu.

Dr Max Uhle: Mound Settlements at Ancon.

Prof. Marshall H. Saville: Archeological Researches in the Andean Highlands of Ecuador.

J. Jijon y Caamaño: Pueblos prehistóricos de Imbabura. Alfareria prehistórica du Guano.

Dr K. T. Stoepel: Report on the Berlin Expedition to Colombia and Ecuador.

Dr K. T. Stoepel: The Ancient Monuments of San Agustín, and Archeological Researches in the District of the Upper Magdalena River.

Jonkheer L. C. van Panhuys: Recent Discoveries in Dutch Guiana.

Jonkheer L. C. van Panhuys: Development of Ornament, etc.

Professor Dr Karl Sapper: Das tägliche Leben der Ketchi-Indianer, Guatemala.

Dr S. A. Lafone Quevedo: Identification of the Chanca Peruvian Indians.

Alphonse Gagnon: Les sauvages du Canada.

Dr Leo Sternberg: Lewis H. Morgan's Touranian-Sanovian System and the Nations of Northeastern Asia. (Homage to the 40th anniversary of the great Americanist's work, "Systems of Consanguinity and Affinity of the Human Family.")

Waldemar Jochelson: Scientific Results of the Ethnological Section of the Riabouchinsky Expedition of the Imperial Russian Geographical Society.

F. C. Mayntzhusen: Gebrauche bei der Geburt und die Namengebung der Guayaki.

E. Roquette: Die Nhamiquaras Indianer in Zentral Brasilien. (Ethnographic results of the Rondon Commission.)

Alberto V. Friß: Männer Bunde der Chamacoco, Brazil.

Capitão Henrique Silva: A tribu Goia ou Gotazes.

Prof. M. Gonzalez de la Rosa: The Toscanelli Question and other Solutions of the Columbus Problems.

Baron de Borchgrave: La Flandre et le Greenland au IXe siècle.

Dr R. Pietschmann: Chronik des Huaman Poma.

Dr B. Glanvill Corney: The Rule of Don Manuel Amat, Viceroy of Peru, 1767-1776.

Mrs Zelia Nuttall: Note on the Missing Text of the Magliabecchi MS., and on Certain Unedited MSS. Relating to the History of Mexico.

Dr A. M. Tozzer: A Spanish MS. in the Archives of the Indies at Seville on the Maya-Lacandonnes.

Dr C. Warren Currier: A Sketch of a Few Sources for the Ecclesiastical History of Spanish America in the Early Colonial Period.

Reg. Rat. Dr F. Heger: Neue Oellbilder zur Veranschaulichung der Rassenmischung in Mexico.

Dr J. T. Medina: Fray Diego de Landa, Inquisidor de los Indios de Yucatan.

M. de Oliveira-Lima: The Protection of Brazilian Aborigines.

D. J. Gutierrez Ponce: The National Academy of History, of Colombia.

R. B. Orr: Pre-Columbian Copper in America.

Prof. Geo. Grant MacCurdy: Shell Gorgets from Missouri.

Dr K. T. Preuss: Vorlage seines Werkes "die Religion der Cora Indian,"
texten nebst Vortrag: die magische Denkweise der Cora.

Dr Franz Boas: Report on the Work of the International School of American
Archæology and Ethnology in Mexico.

Alden W. Mason: Notes on the Tepeuanos.

Señora Isabel Ramírez Castañeda: El Folklore de Milpa Alta, Valle de
Mexico.

Manuel Gamio: La arqueología de Atzacapotzalco, Mexico.

A. P. Maudslay: The Great Teocalli of Tenochtitlan, Mexico.

Dr Capitan: Les amulettes de Teotihuacan.

Mrs Barnett: Quelques observations sur les petites têtes en terre-cuite de
Teotihuacan.

Dr Seler: Über die Fresken von Teotihuacan und verwante Darstellungen
auf Thongefassen.

Frau Cecilie Seler: Painted Potsherds from Cuicatlan and Teotitlan del
Camino, Mexico.

Strausbury Hagar: The "Houses of Rain and Drought" in Codex Vaticanus
3773.

Hermann Beyer: Über den Affen in den Mexikanischen- und Maya-Codices.

Dr Walter Lehmann: Some Central American Calendar Problems.

Dr G. B. Gordon: An Unpublished Inscription from Quirigua.

Dr Capitan: Quelques caracteristiques de l'architecture Maya.

Comte M. de Périgny: Le plein cintre dans l'Architecture Maya.

Dr Seler: De Ruinen von Uxmal in Yucatan.

Dr E. L. Hewett: The Excavations of the School of American Archæology at
Quirigua, Guatemala.

J. Cooper Clark: The Story of "Eight Deer" in Codex Colombino.

J. Martinez Hernandez: A Maya Account of the Creation of the World. An
Unpublished Document from the Book of Chilam Balam, of Chumayel.

Dr Alfonso Pruneda: The Mexican Laws Respecting Archeological Monu-
ments.

Dr A. C. Simões da Silva: Points of Contact of the Prehistoric Civilizations
of Brazil and Argentina, with those of the Pacific Coast Countries.

Dr Nelson Coelho de Senna: Ethnographia e Archeologia indigena do Brazil.

J. C. Gomez Ribeira: Anthropomorphic Idol of Iguape, S. Paulo.

Salvador Debenedetti: Influencias de la cultura de Tiahuanaco en la región
del Noroeste Argentina.

Dr Alejandro Gancedo: Hallazgo arqueológico.

Herr Regierungsrat Dr. F. Heger: Die Diaguitas, oder Calchaqui Kultur,
Argentina.

Dr Ricardo Palma: Huacos antropomorfos mutilados del Peru.

Dr Lizardo Velez Lopez: Las Mutilaciones en los vasos Antropomorfos del
Antiguo Peru.

The nineteenth International Congress of Americanists will be held
in 1914 and will consist of two sessions, the first at Washington, D. C.
and the second at La Paz, Bolivia.

GEORGE GRANT MACCURDY

ORIGIN OF CERTAIN EARTH CIRCLES

IN an article by Mrs N. D. White, entitled "Captivity among the Sioux, August 18 to September 26, 1862," printed in vol. ix of the *Collections of the Minnesota Historical Society*, the following statement appears (page 419):

We could distinctly hear the report of muskets during this battle. We were now in the greatest danger of all our captivity; for, with defeat of the Indians, they were likely to return and slay all the white captives and perhaps some of the half-breeds. The latter appeared to be somewhat alarmed, and consequently we were all put to work by "Black Robinson," throwing up breastworks. I was not a soldier, but soldiers never worked with better will than I did to get those fortifications completed. I used a shovel; my squaw mother used an old tin pan. The remains of those breastworks are still visible, I am told. . . . We were also made to construct breastworks inside the tipi. We sank a hole in the ground about eight feet in diameter and two feet deep, and placed the earth around the pit, thereby increasing the depth to about four feet. In this den eleven of us spent three nights. While the battle was raging, the squaws went out with one-horse wagons to take ammunition to the warriors and to bring in the dead Indians.

This evidently explains the origin of some of the small circular earthworks and depressions met with in Minnesota and the Dakotas.

Referring to a point about ten miles south of Bismarck, N. Dak., Mr G. F. Will states (*American Anthropologist*, 1910, vol. xii, p. 58):

On the top of one of these hills . . . are thirty or forty depressions, six to ten feet across, and with an average depth of about one foot. Excavation here revealed only a very few bone chips and a few signs of burned earth at a depth of six to twelve inches.

These depressions may readily be attributed to excavations made inside of tipis, similar to the one described by Mrs White as having been made just fifty years ago. Assuming the examination to have been made within the depression, although the account is rather ambiguous, the "few signs of burned earth" discovered may well have resulted from fires kindled after the construction of the embankment within the tipi, and earth and mold to a depth "of six to twelve inches" would undoubtedly have accumulated in the depression after the abandonment of the tipi. The group of thirty or forty depressions mentioned by Mr Will probably marks the site of a village composed of that number of tipis, which at some time were fortified within against attack by an enemy.

DAVID I. BUSHNELL, JR

UNIVERSITY, VA.

ORIGIN OF THE WORD LAGETTO

I recently read a statement made by an English philologist (and am under the impression that I have seen the same statement in some dictionary) that the word *lagetto* (changed by the botanist Jussieu to *Lagetta* to form a genus-name), a popular appellation in Jamaica for the tree which affords the well-known "lace-bark," is an Indian (Arawak) term. It seems strange that some one should not, long ere this, have detected the origin of this word, which is merely a Spanish-Negro corruption (by metathesis of the letters *l* and *g*) of *latigo*, a Spanish name (of unknown etymology) for a horse-whip. The inner bark of the *lagetta*-tree consists of numerous concentric fibers that interlace in all directions, and, when macerated in water and stretched out laterally, assumes the appearance of coarse lace. It is recorded that Charles II received as a present from the governor of Jamaica a cravat, frill, and pair of ruffles made from this material, which (*aiant*) is employed even now for the fabrication of bonnets, collars, and other minor articles of feminine apparel. Formerly, however, it was twisted and knotted and used for making whips with which, in the time of slavery on the island, the backs of the negroes were lashed by their task-masters. Hence the negro metaphorical application of the name of the whip to the tree that furnished the material for making it. Von Tschudi, in his *Travels in Peru*, remarks that the corruption of Spanish words by the metathesis of the letters that compose them was a common phenomenon in the speech of negro slaves. A figure of a lace-bark *latigo*, consisting of handle and lash in one piece, was given a few years ago in the French scientific journal *La Nature*.

W. R. GERARD

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ANTHROPOLOGIC MISCELLANEA

The Peruvian Expedition of 1912, organized under the auspices of Yale University and the National Geographic Society for the purpose of carrying on geographic and anthropologic exploration in Peru, under the directorship of Prof. Hiram Bingham, will endeavor to continue and extend the work of the Yale Peruvian Expedition of 1911, utilizing the discoveries made then and continuing further along the same lines. It is the purpose to pursue intensive studies in the region where reconnaissance work was done on the last expedition, taking advantage of the discoveries then made to guide the plans for this year.

The work planned for the expedition includes (1) the preparation of large-scale maps showing, among other details, ancient and modern sites and the routes connecting the later Inca capital of Vitcos with the rest of Peru; (2) The discovery and identification of the places mentioned in the Spanish chronicles and in the early accounts of Peru, particularly the places connected with the 35 years of Inca rule after the advent of Pizarro; (3) The study of the various diseases throughout the region visited and their geographical extent; (4) The study of the effect of coca chewing; (5) The study of the bone deposits in the Ayahuaycco Quebrada where human and other bones were found on the 1911 expedition; (6) The collection of osteological material not only in the Cuzco gravels but also in the mountains of Vilcabamba; (7) The making of photographs and physical measurements of native types throughout the region visited, with particular reference to a study of the distribution of the more important groups; (8) The collection of material for a study of the distribution of types of cranial deformation; (9) A thorough investigation of the region round about and north from Cuzco and Pisac, photographing, measuring, and describing whatever architectural material presents itself; (10) The continuation of the investigation of the ruins discovered on the expedition of 1911; (11) The penetration still farther into the jungles of the Pampaconas valley and beyond, to see whether any more remains of Inca occupancy can be found.

Prepared Human Head.—Some years ago, Lieut. W. E. Safford, U. S. N., brought to the National Museum a large collection of ethnological material which he obtained among the Jivaro Indians of the northern forest region of Peru. Among these was a human head which

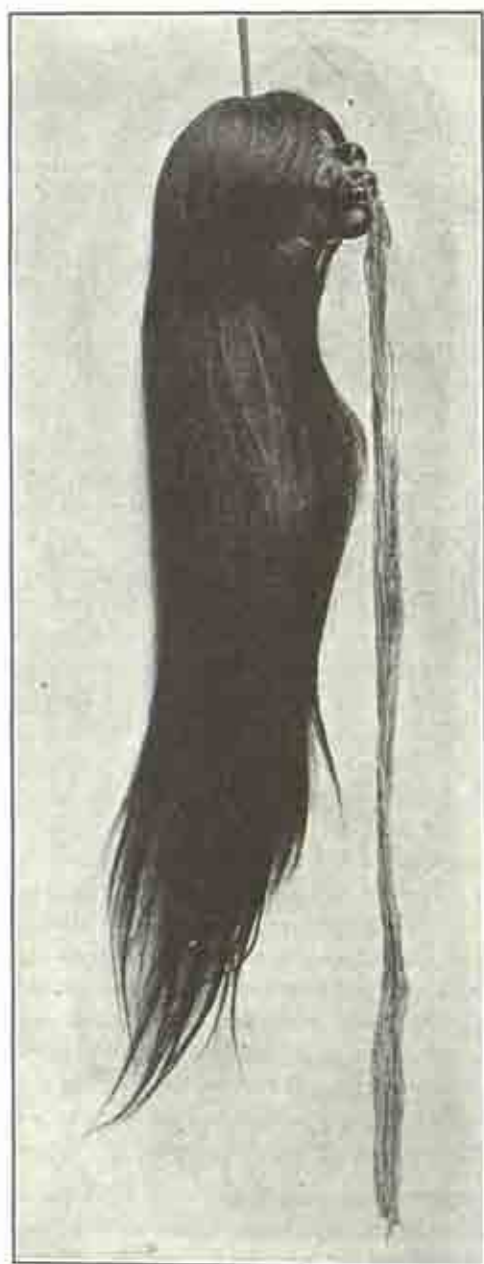


FIG. 49.—Head dried by Jivaro Indians, northern Peru. Collected by William E. Safford.

was worn about the necks of chiefs on ceremonial occasions as a sign of bravery and prowess in warfare, corresponding to the scalps of the North American Indian. An account of this human head was given Lieut. Safford by Mr Tirado, who was an eye-witness of the process. The description is as follows:

"The head of the victim is cut off squarely, with a small portion of the neck attached to it, and the scalp is laid open by a longitudinal slit down its back to the base of the neck so that the skull may be removed. The skin is then peeled off, a portion of flesh remaining attached to it, leaving the skull bare, a knife being used about the eyelids, ears, and lips, so as to leave them attached to the head and face. When the skull and the jaw-bone are removed, the sack-like envelope has the slit in its back sewn up, and the head resembles somewhat that of a mammal in process of preparation by the taxidermist. A small hole is made in the center of the scalp, and a loop of cord or sennit is passed

through and toggled or knotted. This loop is long enough to pass around the neck of the future wearer. The head is then dipped into a hot infusion of certain herbs (probably of an astringent nature), care being taken not to allow the roots of the hair to enter. Hot stones are then introduced into the cavity for the purpose of drying it, the stones being replaced as they cool off. Sometimes a whole day is spent in this operation. When the head is sufficiently dry it is hung up in the smoke of the daily fire used for cooking, the hair being wrapped up in leaves to protect it from the smoke. During the entire process it continually decreases in size. After three or four months it is sufficiently cured. It is then taken down, and the lips are pierced with holes through which loops are passed for attaching a skein-like mass of string. On this skein are stained spots or bars to indicate how many victims the wearer of the trophy has slain; and the jet-black face is ornamented with a number of red stripes, the pigment used being obtained from the 'achote' or arnotto of commerce (*Bixa orellana*).

WALTER HOUGH

Anthropological Work by the Geological Survey of Canada.—Mr C. M. Barbeau's Wyandot ethnological field work in Oklahoma of September–December, 1911, met with gratifying results, particularly as regards mythology, rituals, social organization, and music; Mr Barbeau left for Oklahoma in April, 1912, to resume his Wyandot researches. Dr. A. A. Goldenweiser continued work on Iroquois social organization and religion at Six Nations Reserve on Grand River, Ontario, from December, 1911, to February, 1912, and is going forward with his researches in the summer of 1912. Mr F. W. Waugh, of Toronto, has been intrusted with the study in the field of Iroquois material culture, and spent some time on this work at Six Nations Reserve in the winter of 1911–12; this branch of Iroquois ethnology is being continued by Mr Waugh in the spring and summer of 1912. The ethnological study of the Ojibwa has been intrusted to Dr Paul Radin; the first Ojibwa reservation visited was at Sarnia, near Lake Huron, where a large body of text material has been obtained. Museum work in Canadian archeology has been continued by Mr Harlan I. Smith with the assistance of Mr W. J. Wintemberg, of Toronto; Mr Smith and Mr Wintemberg will make an intensive study of a selected site in the St Lawrence lowlands in the spring and summer of 1912. A new departure in the anthropological work of the Survey has been undertaken by Mr Francis H. S. Knowles, Assistant in Physical Anthropology at Oxford University. The physical anthropology of the

Indians of eastern Canada has been neglected on the whole, so that it seemed advisable to begin this branch of anthropological work with an eastern tribe. The Iroquois have been selected for the purpose and Mr Knowles has undertaken the task of securing anthropometric data at Six Nations Reserve in the spring and summer of 1912.

International Congress of Anthropological Sciences.—At an International Conference called by the Royal Anthropological Institute of Great Britain and Ireland and held June 4th in the rooms of the Institute, London, immediately following the sessions of the International Congress of Americanists, it was voted to organize an international congress of the anthropological sciences, which shall either include several existing congresses or work in affiliation with them. The congresses which it is hoped may become a part of the projected congress are: Congrès International d'Anthropologie et d'Archéologie Préhistoriques, International Congress of Anthropology, Congrès Internationaux d'Ethnographie, International Folk-Lore Congresses, and International Congress of Americanists.

The organizing committee appointed by Dr A. P. Maudslay, president of the Conference, is constituted as follows: Maudslay (ex officio), chairman; R. R. Marett (of Oxford), secretary; Hrdlička, Boas, Capitan, Krämer, Heger, Waxweiler, Duckworth, Lafone Quevedo, and van Panhuys. This committee met at the close of the Conference and decided that a congress should not be held before 1915 (if then). In the meantime a general committee is being constituted by gradually adding names to the organizing committee; and subcommittees are being formed to establish harmonious relations with the various existing international congresses.

GEORGE GRANT MACCURDY

Death of Henry Jones.—Henry Clay Jones, father of the late Dr William Jones, died February 29, 1912. He was the son of George W. Jones, a white man, and Katiqua (*keti'kudza*, or, in the native syllabary, *ke ti ge wa*—Eagle Woman), a full-blood Fox woman. Henry Jones was widely known as the best and most reliable interpreter of his people, and more than once represented them at Washington. Though a Fox half-blood, Henry Jones in 1869 went with the Sauk from Kansas to Oklahoma, where he became a member of the council and was known as the most progressive member. Henry Jones accompanied his son William to Tama, Iowa, where the Foxes proper (the term "Sac and Fox" has more of a legal than an ethnological meaning) live, to enable

the latter to gather the material for the well-known "Fox Texts." It was largely for his father's sake, Dr Jones wrote, that the information was furnished him. A fact not generally known is that Henry Jones was primarily the translator of William's "Fox Texts," though the latter revised the translation. Last summer the writer had occasion to hear Henry Jones interpreting, and considered his ability in that line as altogether exceptional. For some years his health had been failing; he died of Bright's disease in his sixty-eighth year and was buried with Masonic rites after the services at his home.

TRUMAN MICHELSON

Eric Boman, well-known for his researches in the Andean region of Argentina, etc., left Stockholm on January 10, 1912, on a new expedition to South America, under the auspices of the Swedish Anthropological and Geographical Society, which furnishes a subsidy for this investigation. The expedition will last about a year. In a letter to Dr Alexander F. Chamberlain, dated Rio de Janeiro, February 10, Dr Boman outlines the objects of the expedition as follows: First, to continue the archeological investigations south of the Province of Catamarca, with a view of discovering whether the pre-Hispanic remains there are sufficiently similar to those of the northern Andine provinces as to be referred to the same Diaguitan culture; and to seek in the region of the Lagunas de Huanacache for traces of the old Huarpes. Second, to carry on investigations in Chile, from Santiago to Copiapo. In this region there may be found numerous remains representing the period of Inca domination; perhaps also some traces of the Diaguitas, and probably likewise some autochthonous substrata. Besides his archeological researches, Dr Boman's plans include the collection of folklore and the obtaining of anthropometrical measurements of pure Indians. His address during the whole expedition will be Jakobsgatan 4, Stockholm (Sweden), whence all mail will be forwarded to him in South America.

Mr Clarence B. Moore has returned after five months spent in investigating aboriginal mounds of Red river, in Louisiana, Arkansas, and Texas. Among many other objects were obtained three pipes of great interest, two of which came from a mound in southwestern Arkansas. One of these, of earthenware, the stem and bowl being in one piece, is twenty-two inches long. The other, probably of a compact limestone, represents a human figure on all fours, the arms not being worked out in detail, though the legs are carefully carved. A third leg, smaller than the others, appears in relief in the rear of the figure, between

the other two. The third pipe was found in a mound in northwestern Louisiana and is of earthenware; its height is five and one-half inches. It consists of a human figure seated on the lower limbs which extend backward parallel. The figure holds a pipe in front of it, from the bowl of which ascends a passage through the figure to the mouth, which is open in such manner that smoke emerges from the mouth when the pipe is in use. These pipes will be more fully described and illustrated in a forthcoming paper to be published in the *Journal of the Academy of Natural Sciences of Philadelphia*.

Miniature Indian Baskets.—In an address before the Academy of Science of St Louis, Dr H. M. Whelpley spoke on miniature Indian baskets and exhibited two specimens made by the Pomo Indians which were viewed by means of simple microscopes. The foundation of the baskets is of white leaf willow (*Salix argyrophylla*) and is sewed with California sedge (*Carex barbara*). The baskets are made in pattern, black and white, the black being from the root of the California sedge. The larger basket is .18 X .10 inch, with an opening .06 inch across, and weighs one-fourth grain. The smaller basket is .10 X .04 inch, with an opening .04 inch across, and weighs one-twentieth grain. Both baskets are woven in the same manner as large baskets and carefully patterned. The Pomo Indians, living in northern central California, are noted for the excellence of their basketry, which, in workmanship, beauty, and variety of design, is unrivaled in North America. The women are usually the weavers, but the smaller of the two baskets described was made by one of the few men weavers now left among the Pomo.

The American Museum of Natural History is equipping a number of expeditions for summer field work. Dr Clark Wissler expects to visit the Northern Blackfoot of Alberta, as well as the Flatheads and Fort Peck Sioux of Montana, a large portion of the trip being devoted to the investigation of the ceremonial organizations, which have been the subject of intensive study on the part of the Museum staff for a number of years. For the same general purpose the Comanche, Ute, Shoshone, and Santee will be visited by Dr R. H. Lowie, who also intends to spend some time with the Crows in order to obtain additional data on their social organization. Mr N. C. Nelson has already begun an archeological reconnaissance of the lower Rio Grande district. Mr Alanson Skinner will continue to work with the Menomini, and Rev. Gilbert L. Wilson will resume his investigation of the Hidatsa.

At the meeting of the building committee of the Museum of the University of Pennsylvania held on May 4th, the architects submitted their plans for the rotunda to be erected at the south of the present building. The lower portion of this rotunda will provide an auditorium seating 750 persons, while the upper or main floor will be an exhibition hall lighted by means of windows placed high above the floor and close to the roof. The lecture room can be used in connection with the Museum or independently by means of a separate entrance. It was announced at the same meeting that a sum considerably in excess of the amount needed for the rotunda and for its furnishings had been subscribed and the architects were instructed to prepare plans for a further addition. It is expected that the specifications will be complete before the 1st of August.

THE TRUSTEES of Phillips Academy, Andover, Mass., have authorized the department of archeology to begin an archeological survey of Maine this year. Already the curator, Mr Warren K. Moorehead, has had an agent of the department in Maine for some weeks. A number of camp sites, cemeteries, and other places have been entered on the standard government maps. It is proposed to map the entire state. The indications are that the ancient Indian population was most numerous along the coast, about Sebago lake, on the lower Penobscot, Moosehead lake, and Chamberlain lake. A number of students accompanied Mr Moorehead and others to Maine in June. The excavation of one or two sites was begun in May.

DR ALEŠ HRDLIČKA, curator of the division of physical anthropology, U. S. National Museum, has gone to the Upper Yenisei region of Siberia, to carry on studies and to make collections for the museum and the Panama-California Exposition of San Diego. From the Upper Yenisei he will go to Irkutsk, and such other parts of Mongolia and Turkestan as he may have time to visit. After leaving Siberia he will visit Kiachtata in Chinese Turkestan, Mongolia, and then follow the road to Urga, whence he will proceed along the old caravan route to China proper.

HERR WILHELM REHLEN, vice-president of the Association of Bavarian Historical and Archeological Societies and of the Anthropological Society, as well as a patron of the Nuremberg Museum, has been through the United States for the purpose of studying archeological collections. Herr Rehlen, while not professionally engaged in archeological research, has been very much interested in the Paleolithic period and has published contributions to this subject.

DR RILEY D. MOORE, aid in the division of physical anthropology, U. S. National Museum, and Mr John P. Harrington, ethnologist, of the School of American Archaeology, Santa Fé, New Mexico, will make a trip to St Lawrence island, Alaska, to make observations on the tribe of Eskimo living thereon. The materials gathered are to be incorporated in the exhibits of the U. S. National Museum at the Panama-California Exposition at San Diego in 1915.

THE MUSEUM of the University of Pennsylvania has arranged to send an expedition to the Amazon under the direction of Mr Algot Lange. The expedition will be furnished with a steamer large and seaworthy enough to carry the party from New York to the mouth of the Amazon and up that river for several thousand miles to the tributaries, where the Indian tribes will be studied and collections made for the next three years.

PROF. HENRY MONTGOMERY has been relieved of the curatorship of the Museum of the University of Toronto, at his own request, and henceforth will devote his time and energies to the continuation of his field studies in archeology, commenced about thirty years ago in North Dakota and subsequently extended to Utah, Nebraska, Manitoba, and Ontario.

WE regret to record the death, on April 21, 1911, of Mr A. T. Sinclair, of Allston, Boston, Mass. Mr Sinclair was a keen student of the Gypsies and of the subject of tattooing, and the results of some of his studies have been published in the *American Anthropologist*, the *Journal of American Folk-Lore*, and the *Journal of the Gypsy Lore Society*.

THE PUBLICATION of a quarterly series of *Studies in Linguistic Psychology*, under the editorship of Prof. Robert J. Kellogg, has been commenced by the James Millikin University at Decatur, Illinois. The new publication consists of sixty-four pages and the subscription price is \$1.25 a year.

PROF. FREDERICK STARR, of the University of Chicago, will conduct an expedition to West Africa, to cover a period of six months. He will be accompanied by Mr Harry Foster Dean and Mr Campbell Marvin. Especial attention will be given to native arts and industries, religions and folklore.

PROF. FRANZ BOAS returned from Mexico to New York on May 9th, and sailed for London on May 11th in order to attend the Congress of Americanists, where he represented Columbia University, the American Ethnological Society, and the American Philosophical Society.

THE Cornplanter medal for historical research has been awarded to Dr Reuben Gold Thwaites, secretary and superintendent of the Wisconsin State Historical Society, in recognition of his service to Iroquois research in editing and publishing the *Jesuit Relations and Allied Documents*.

ON June 4, the University of Oxford conferred the honorary degree of D.Sc. upon two well-known anthropologists: A. P. Maudslay, president of the Royal Anthropological Institute of Great Britain and Ireland, and Prof. Franz Boas, of Columbia University.

A BIOGRAPHY of the late Dr William Jones, entitled *William Jones, Indian, Cowboy, American Scholar, and Anthropologist*, by Henry Milner Rideout, is in preparation and will soon be published by the Frederick A. Stokes Company, New York.

THE COLLECTION of aboriginal objects from the Caicos islands in the West Indies, described in the last number of this journal by Mr Theodoor de Booy, has been acquired by and added to the collections of George G. Heye, Esq., of New York.

DR J. ALDEN MASON and Mr William H. Mechling, both of the University of Pennsylvania, have recently returned from Mexico, where they have been assisting Professor Boas in the linguistic reconnoissance of Mexican Indians.

PROF. ARTHUR KEITH delivered a series of Hunterian Lectures at the Royal College of Surgeons on February 26 and 28, March 1, 4, 6, and 8, on The Relationship of Neanderthal Man and Pithecanthropus to Modern Man.

A GRANT of \$75.00 has been made by the trustees of the Elizabeth Thompson Science Fund to K. Stolyhwo, rue Kaliksta, Varsovie, Poland, for the archeological exploration of the Cave of Lary, Poland.

AMONG the Knights created on the occasion of the birthday of King George, we note the name of Charles Hercules Read, LL.D., President of the Society of Antiquaries.

GEN. JOHN S. CLARK, for many years engaged in a study of the history of the Iroquois, died April 8, 1911, at Auburn, New York, aged eighty-nine years.

DR A. HRDLÍČKA, of the U. S. National Museum, has been named a corresponding member of the Société d'Anthropologie de Bruxelles, Belgium.

PROF. ROLAND B. DIXON has left Cambridge for Kashmere, Ladakh, and India, where he will spend several months in ethnological research.

PROF. RUDOLF MARTIN, who has spent some time in Versailles, is preparing his long-expected text-book on physical anthropology.

DR GRAEBNER, of the Rautenstrauch-Joest Museum in Cologne, has commenced to lecture at the University of Bonn.

DR ALFRED M. TOZZER has been appointed assistant professor of anthropology at Harvard University.

THE Lucy Wharton Drexel medal of the Museum of Archeology of the University of Pennsylvania has been awarded to Dr M. Aurel Stein for his explorations in China.

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THE PHYSIOGNOMY OF THE INDIANS OF SOUTHERN NEW ENGLAND

BY HARRIS HAWTHORNE WILDER

WITHIN the last thirty years a number of skulls of illustrious men have been submitted to anatomists, either to learn their special characteristics or to establish their identity. Thus the skull of Kant was studied by Kupffer and Bessel-Hagen in 1881, that of Raphael by Welcker in 1884, and that of Bach by His in 1895. The supposed skull of Schiller, long cherished at Weimar as genuine, was proven spurious by Welcker in 1882, and the real one was supposed to be lost until, within the last few months, it has come to light, and is now in possession of the anatomist August Froriep.¹ During this series of investigations the detailed relationships between the face of the skull and the fleshy face have become more and more definitely known, until it seems now possible, given either one, to reproduce the other with considerable accuracy. Thus far the study has been confined in the main to ascertaining the average thickness of the soft parts over certain definite points, and then covering the face of the skull with a layer of clay, or other plastic substance, carefully observing the proper measurements at each point. Although this method is confessedly incomplete, it was used with startling results in 1895 in building up the face upon the supposed skull of Bach, results that proved the identity of the

¹ Presented at the annual session of the Anatomische Gesellschaft at Munich in April last (1912). Cf. *Anal. Anz.*, May 13, 1912, for the preliminary report.

skull in question beyond all doubt. (Fig. 50.) Since then the method has been employed a few times, generally in somewhat fanciful cases. Thus Kollmann has reconstructed the face of a Neolithic woman from the lake-village site of Auvèrrier, Lake Neuchâtel, and Merkel has built up the bust of an early Low-Saxon



FIG. 50.—Reconstruction of the face of Johann Sebastian Bach; built directly upon the skull by the sculptor Seffner in accordance with the measurements taken by Professor His. (After His, 1895.)

from an ancient skull, found by excavation in the vicinity of Göttingen. Still, in spite of the real interest in the results, the data for such a reconstruction are not yet complete, and for certain of the soft features, notably the fleshy part of the nose, the lips, and the surroundings of the eyes, there is still much to be done. It is not impossible that even in these details there may be definite correlations between the bony structures and the soft parts, which later research will reveal, and that indications of these exist upon the face of the skull, if they could only be read. For the nose, at least a good beginning of this was made by Welcker in his discussion of the supposed Schiller skull,¹ but there is still much to be done in this direction.

¹ Welcker, *Schiller's Schädel und Todtenmaske*, Braunschweig, 1883, esp. pp. 84-93.

Regarding the general thickness of the soft parts of the face, not connected with the special features, Welcker established the average thickness at nine definite median points, obtaining his data from thirteen male bodies of middle age by means of a small, double-edged knife with a chisel-shaped end. He first ascertained with accuracy the total length of the blade of this instrument, then, at each of the determined points, thrust it perpendicularly through the soft parts until it came to the bone, and measured the part of the knife-blade still remaining. The points taken, with the average thickness at each, are given in the first column of the sub-joined table.

Wilhelm His, in 1895, during his investigation of the Bach skull, made further studies in the thickness of the soft parts, using a larger number of bodies, including females, and establishing several lateral points.

To obtain his measurements he abandoned the thin blade employed by Welcker in favor of a sewing needle, set in a handle and bearing a small rubber disk. The needle was oiled and thrust into the flesh perpendicular to the surface, the disk registering the thickness. After withdrawal, the part below the disk could be measured with a millimeter rule.

His first showed the difference in the thickness of the soft parts in bodies of various conditions, and compared the data obtained from 24 male suicides, who were in sound bodily condition, with those from 9 males who had died of wasting disease. His results from the sound bodies in the case of each sex separately are shown in the second and third columns of the table here given.

Still more material was furnished by Kollmann and Büchly three years later, apropos of the reconstruction of the face of the Neolithic female skull aforesaid. These investigators studied the bodies of 21 males and 7 females in various bodily conditions, and added three points to those employed by His; namely, the free edge of the nasal bones (rhinion), previously used by Welcker; the highest point upon the surface of the jugal bone; and the middle of the zygoma. The averages of these 21 males and of the four well-nourished females are given in the table here presented (columns

TABLE SHOWING THE MEASUREMENTS OF THE SOFT PARTS OF THE FACE, ACCORDING TO DIFFERENT AUTHORS, AND IN THE DIFFERENT SEXES AND RACES

		Column 1, Welcker, 1883; averages of 13 males. Column 2, Hux, 1895; averages of 24 male skulls between the ages of 17 and 72. Column 3, His, 1895; averages of 4 female skulls. Column 4, Kollmann, 1898; averages of 21 males. Column 5, Kollmann, 1898; averages of the 24 males of His with the 24 males of Kollmann; 45 in all. Column 6, Kollmann, 1898; averages of four well-nourished females. Column 7, Kollmann, 1898; averages of the four female skulls of His with the four females of Kollmann; 8 in all. Column 8, Birken, 1903-1907; averages of 6 male Chinese, beheaded. Column 9, Fischer, 1905; averages of two male Papuans. Column 10, von Egeling, 1909; averages of three male Hereros. Columns 11 and 12, the figures used in the reconstructions given in this paper: New England Indians and others—column 11 for males, column 12 for females. In columns 8, 9, and 10, the black-faced figures are those which are markedly different from the European averages.											
		1	2	3	4	5	6	7	8	9	10	11	12
Median	Location of Point												
	Occipital; midway between lambda and rhinion.	6.8	—	—	—	—	—	—	—	—	—	—	—
	Middle of parietal region.	5.3	4.08	4.16	3.07	3.56	3.02	3.59	4.24	3.55	3.03	3.6	3.6
	Forehead; line of hair.	—	—	—	—	—	—	—	—	—	—	—	—
	Forehead; middle.	4.3	—	—	—	—	—	—	—	—	—	—	—
	Forehead; glabella.	—	—	—	—	—	—	—	—	—	—	—	—
	Nasion.	5.9	5.17	4.75	4.20	4.69	3.9	4.32	5.45	4.1	5.36	4.7	4.3
	Nw.	5.9	5.45	5.6	4.31	4.93	4.1	4.55	6.6	2.95	4.76	4.9	4.5
	Nr.	3.3	3.29	3.0	3.43	3.25	2.51	2.78	3.43	2.45	3.76	3.25	2.8
	Nr.	—	—	—	2.12	2.12	2.07	2.07	2.38	2.9	3.43	2.1	2.0
	Rhinion; free end of nasals.	2.2	—	—	—	—	—	—	—	—	—	—	—
	Akanthion; base of upper lip at septum.	—	11.25	9.75	11.65	11.59	10.1	9.02	11.2	9.6	12.16	11.6	9.9
	Præthion; middle of hollow in upper lip.	11.9	9.37	8.26	9.46	9.48	8.1	8.18	11.65	9.8	13.63	9.5	8.2
	Transverse furrow of chin at base of lower lip.	10.6	10.0	9.75	9.84	10.05	10.95	10.35	11.02	9.15	10.46	10.0	10.4
	Gnathion; point of chin, directed forward.	8.5	11.05	10.75	9.02	10.22	9.37	10.66	10.95	9.1	9.8	10.2	10.0
	Beneath chin, directed downward.	—	6.16	6.5	5.98	6.08	5.85	6.18	6.07	5.65	5.26	6.0	6.2
Lateral	Middle of eyebrow, or superciliary ridge.	—	5.8	5.5	5.41	5.65	5.15	5.32	6.63	5.05	6.85	5.6	5.3
	Middle of lower rim of orbit.	—	4.9	5.25	3.51	4.29	3.05	4.45	5.52	5.15	5.05	4.3	4.5
	Middle of jugal bone, highest point.	—	—	—	6.62	6.62	7.73	7.73	10.0	4.9	7.31	6.6	7.7
	Middle of zygomatic arch.	—	—	—	4.33	4.33	5.32	5.32	5.77	8.05	4.46	4.3	5.3
	Base of zygomatic arch, near ear.	—	6.05	6.75	7.42	6.74	7.1	6.92	8.59	7.4	11.03	6.7	7.0
	Side of mandible, in front of masseter.	—	8.37	8.1	7.76	8.26	6.16	7.13	7.08	10.1	9.08	8.2	7.2
	Middle of ramus, through masseter.	—	17.55	17.0	17.01	17.53	14.83	15.91	20.05	20.5	18.63	17.5	16.4
	Gonion; angle of jaw.	—	12.68	11.5	8.72	10.46	7.56	9.53	11.73	17.5	13.61	10.5	9.6

4 and 6). Furthermore, these authors, in addition to their own data, added the 24 normal male individuals measured by His, and thus obtained a combined average of 45 normal male individuals (column 5 of the table). For females the data are still meager, but Kollmann and Büchly again combined the results from their four well-nourished female bodies with those from the four female suicides of His, and obtained a combined average of the data from 8 individuals (column 7).

For obtaining their measurements these authors employed a needle, as did His, but instead of using the rubber disk, they blackened the needle with soot from a candle flame before each application. Contact with the flesh rubbed off the soot, and after withdrawal the soot-free part was measured.

The final result of these investigations, here reproduced (fig. 51), is very pleasing, and represents a young woman of rather masculine type, with a markedly Swiss countenance: a good model for a statue of Helvetia.

A second attempt to recall the past, but one not so distant, through plastic reconstruction, was made by Merkel in 1900, who, with the assistance of the sculptor Eichler, built a face upon the skull of an ancient Saxon, found in the neighborhood of Göttingen,



FIG. 51.—Face of a Neolithic Swiss woman from the lake-village site of Auvernier, on Lake Neuchâtel. Built directly upon the skull by Kollmann and Büchly, 1898. (After Kollmann.)

and estimated to be between 1200 and 1400 years old. This work, however, differed in method from the preceding, for Merkel often departed widely from the prescribed data, following rather his



FIG. 52.—Bust of a Low-Saxon of 500-700 A.D.; built upon a skull from the Leinegau district of Germany, near Göttingen, by Merkel, 1910. (From Eggeling, after Merkel.)

own deductions concerning the development of muscles and other parts, as suggested by the lines and features of the skull; yet again, as with Kollmann, the result was extremely pleasing although it cannot well be tested (fig. 52). Upon looking at these striking and very effective results one cannot help thinking of the influence of the professional sculptor who performed the plastic part of the work in each case, and the feeling is strong that much that is satisfying in the result may be due to the skill of the artist, although without any con-

sconscious attempt on his part to express an ideal.

In the direction of racial measurements Birkner, in 1903-1905, measured carefully the heads of six beheaded Chinese, and came to the result that in racial anatomy the soft parts vary more than the skulls, and that the racial differences in the thickness of soft parts are very considerable. Fischer, in 1903, measured the soft parts

of two Papuans, and von Eggeling, in 1909, studied in the same way the heads of four Hereros. The results of these (Chinese, Papuans, Hereros), although they include only a very few individuals, are here added for comparison with the others (columns 8, 9, and 10), and serve to emphasize Birkner's conclusions. Von Eggeling, from whom these last figures are taken, calls attention to the most striking departures from European averages by the use of heavy type, and this method is here reproduced. Thus one sees at once that in the Chinese the base of the bony nose, at the fronto-nasal suture, is sunk much deeper in the flesh, and in the Papuans it is more superficial, than in Europeans; also the traditional thickness of lip in the negro is shown by the thickness at the prosthion in the Herero. In the lateral points there is a greater thickness of flesh over the superciliary ridges in both Chinese and Herero, while in the surroundings of the eye the Papuans are about the same as Europeans. Other marked points of difference are in the cheeks of the Chinese, and in the masseteric region of all three races, where the measurements considerably exceed those of Europeans.

These last three investigators, Birkner, Fischer, and von Eggeling, employed in their work the soot-covered needle of Kollmann, but for this purpose a special instrument has recently been prepared by Czekanowski (1907), consisting of a needle that slides in a brass tube. In this latter is a graduated slot. This indicates the extent of projection of the needle beyond the lower edge of the brass tube, which is disk-shaped and lies flat upon the surface of the skin.

Interested now for several years in these European attempts at reconstructing faces upon skulls, I determined to apply the methods to the skulls of New England Indians, in a region where the extermination of this race has been so complete that no living representatives are now left except two or three small communities where intermarriage with other races, especially Negroes, has been long continued (e. g., Gay Head, Mass; Charlestown, R. I.).

For data I took, in general, those of Europeans, reducing the figures, however, to a single decimal, as a figure in the hundredths place can have no meaning in practical application. Thus reduced, the figures for the two sexes, as used by me, are indicated in the two last columns of the table (columns 11 and 12).

Since, however, a few striking racial differences are to be expected, I allowed the general contours and proportions of the skulls used to effect a few modifications when the indications seemed to demand it. Thus, through the masseter, where the average Euro-

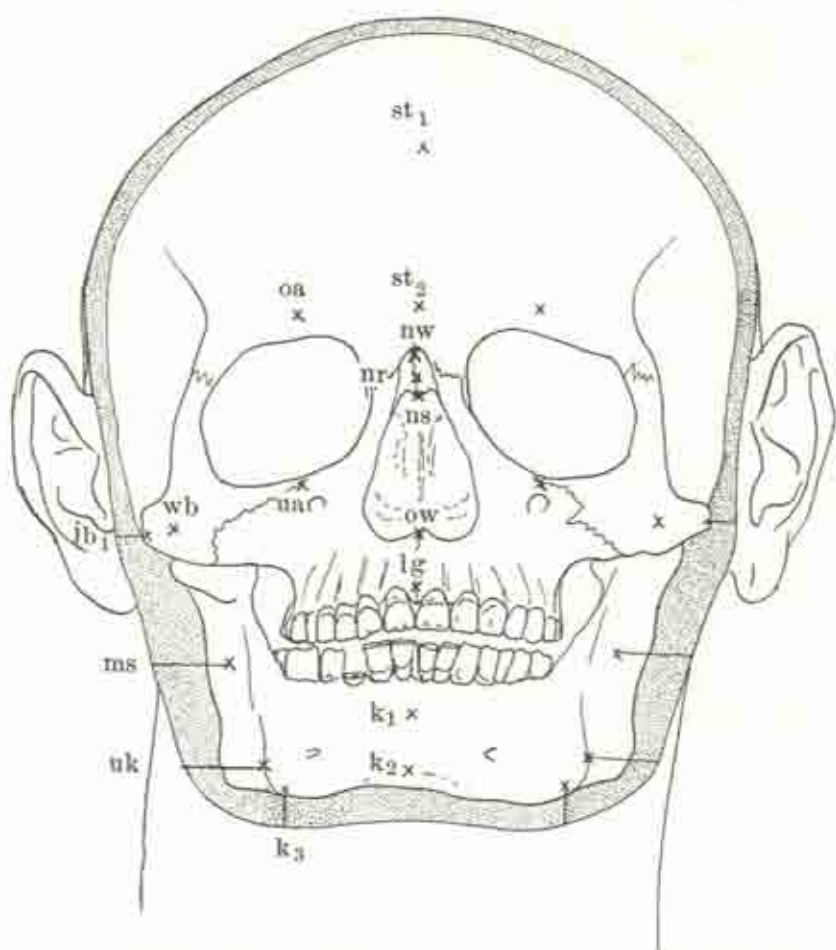


FIG. 53.—Location of the established points upon the face; front view. (After Kollmann and Büchly.)

pean measurement of 16–17 mm. gave the region a hollow appearance, I increased the thickness to 20 or even more, using as an indication the zygomatic arch and the configuration of the area of

insertion of this muscle upon the mandible. In most respects, however, I adhered closely to the European data.

Regarding the plastic material, and the methods of application,

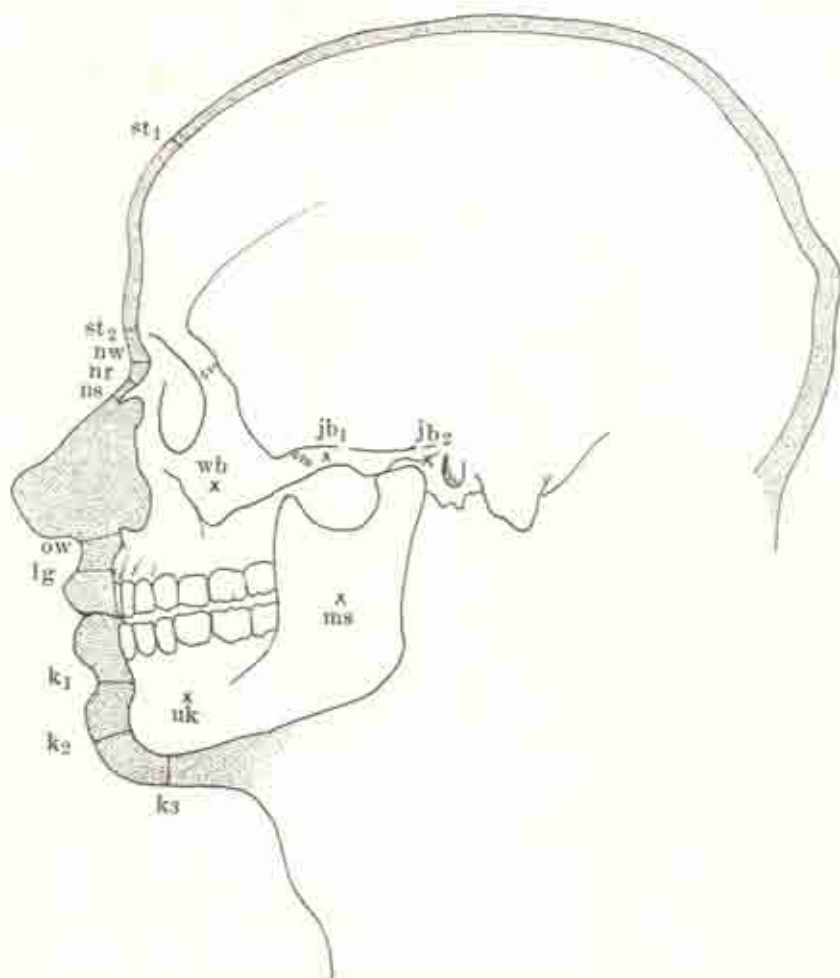


FIG. 34.—Location of the established points upon the face; side view. (After Kollmann and Büchly.)

His and Kollmann used clay, which they spread over the skull, as guided by the points of known thickness, previously built up in the form of pyramids of plaster of Paris, and accurately measured.

Merkel substituted plastilina for ordinary clay, a procedure which has since become universally adopted. Concerning the method of obtaining the exact thickness at the established points, I have used little strips of ordinarily thick writing paper, about a millimeter wide. The strip is bent near the middle into two portions at right angles to each other, and one of them is cut down to a length that corresponds exactly to the required thickness. The unmeasured portion is then used as a standard or foot, and fastened down to the surface of the bone with a little piece of plastilina, while the other piece projects perpendicularly. By carefully building up on both sides of this with more plastilina, any bending of the measuring strip is prevented. I also find it more advantageous to build up the surface as fast as the measures are located, rather than first to cover the skull with these structures; and thus, during the progress of the work, an entire side or the upper part of the face may be completed while the remainder of the skull is still bare.

After their enclosure in the plastilina the little paper strips are as firm and reliable as the plaster pyramids, and the fine white lines of the square-cut ends are always sufficiently obvious. If covered up during the progress of the work they may be found in a moment by rubbing over the spot, and may with equal readiness be concealed at the final finishing of the surface.

The skulls selected for reconstruction include a man and a woman of the Narragansett tribe in Rhode Island, and two men, presumably Nonotucks, from Hadley, Mass., exhumed about four miles from each other.

The details of the four skulls are as follows:

1. Narragansett (male). Exhumed in Jamestown, R. I. (Canonicut Id.)
2. Narragansett (female). Sub-type: Niantic. Exhumed from "Indian Burying Hill," Charlestown, R. I.
3. Nonotuck (male). Exhumed in Hadley, Mass., at "Indian Hill," near Hockanum, on east bank of Connecticut river.
4. Nonotuck (male). Exhumed in North Hadley, Mass., on east bank of Connecticut river.

The first of these is No. 41763 of the collection of Phillips Academy, Andover, Mass., and was kindly lent to me by the



RECONSTRUCTIONS, IN PLASTILINA, OF FOUR NEW ENGLAND INDIANS



RECONSTRUCTIONS, IN PLASTILINA, OF TWO NEGRO MALES AND TWO WHITE FEMALES

curator, Mr Warren K. Moorehead.¹ The second is a skull of real historical value, being that of a daughter of the Niantic chieftain Ninigret. She died young in 1660, and was buried in a log sarcophagus, surrounded by articles of value, in a parcel of land set apart for the purpose by her father, who followed in this the custom of the English. Her body was exhumed in 1859, apparently out of curiosity, but by good fortune the skull came eventually into the possession of Dr Usher Parsons of Providence, who presented it before the Rhode Island Historical Society, in 1862, and published his paper in the *Historical Magazine*, Feb. 1863, pp. 41-44. Through his son, Dr Charles W. Parsons, the skull came into the possession of Brown University, and was entrusted to me by the present director of the Museum there, Dr Albert D. Mead. To both him and Mr Moorehead I wish to acknowledge my indebtedness.

The other two skulls are local, and belong to the Smith College collection. The last was excavated in October 1904, and an account of it was published in the *American Anthropologist* for April-June 1905, pp. 295-300.

In the first row of pl. xxv are given the photographs of the reconstructions in plastilina, built directly upon the skulls by the use of the measurements given above. In this row the order is a chance one, in which the young Narragansett woman comes first upon the left, followed in order by the North Hadley young man, the Narragansett man, and the man from Hadley (Hockanum).

To test the method as to both racial and individual characters I also built up faces in the same manner, and with the same measurements, upon the skulls of two negro males and two white females, and the results of these are given in the second row of the same plate. The first on the left is that of a negro male of 30 years, from the Medical Department of the University of Missouri. The body was obtained from the Fulton Asylum, and the cause of death was recorded as pulmonary tuberculosis.

The history of the second head, also a negro, is peculiar, as it represents to a certain extent a test of the accuracy of the method.

¹ An accompanying label reads: "Skull of New England Indian. Presented by Ferdinand Ambrust, Jamestown, R. I."

This skull was one that I prepared some 25 years ago, and I still remember in a general way the appearance of the face before preparation. I purposely, then, selected it for use in teaching the method to a young man of Northampton, Mr Leigh Hoadley, who sometimes aids me as a volunteer assistant. I taught him the general methods of building up the proper thickness at the various points, and located the points for him; then, without saying anything whatever about the skull, save that I had prepared it, dismissed him to finish the work by himself. Naturally one cannot rely too much upon the memory of such a thing as the face of a dissecting-room subject after so long a time, but when, on the next day, Mr Hoadley brought me his finished result, as given here, it recalled the face of the subject and the circumstances very distinctly and appears to me a good copy of the original.

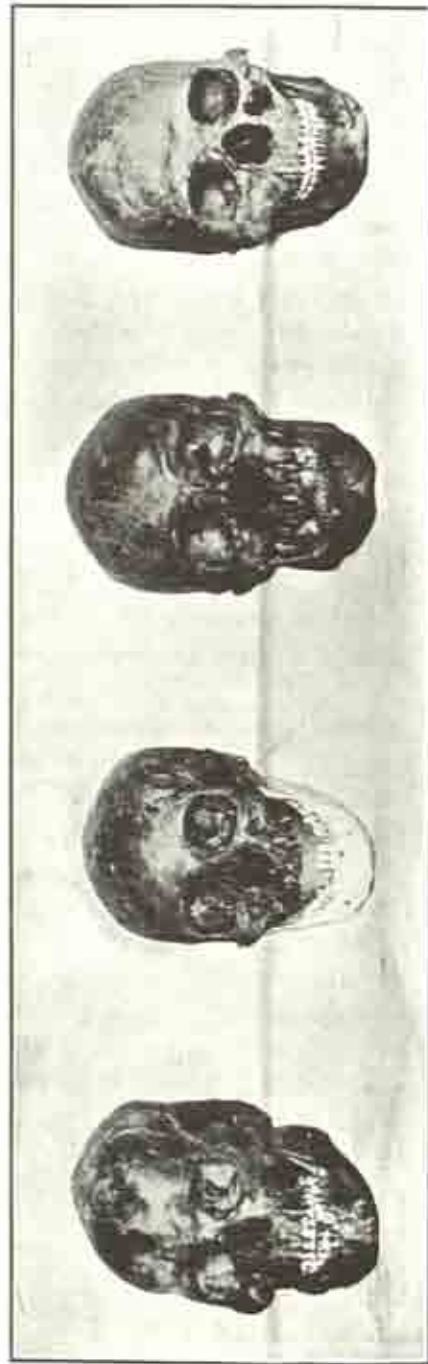
The third and fourth of the series are those of young white women, the third prepared in New York forty years ago, and the fourth a skull purchased from Ward, of Rochester. The reconstructions were very hastily done, merely as tests of race, but seem satisfactorily European.

The first row in pl. xxvi was photographed from the finished casts, which were done in plaster direct from the plastilina, but since the white color offers some advantages to the camera, and especially since the original models received considerably more smoothing and finishing after the photographs of pl. xxv were taken, it has seemed best thus to present them again in their finished form.¹ They are, furthermore, arranged here in the order of the list given above, the two Narragansetts, man and woman, upon the left, the two Nonotucks from Hadley upon the right. The second row shows the skulls of the same, in the same order, taken after the removal of the plastilina subsequent to the casting. In the case of the young Narragansett (Niantic) woman the mandible was wanting, and the substitution was made of a fairly well-fitting piece from a female white skull. In completing the restorations, however,

¹ The work of casting my plastilina originals in plaster was most skillfully carried out by Mr E. A. Thompson, of Amherst, to whom also I am indebted for the final finishing of the surfaces.



PLASTER CASTS OF THE PLASTILINA RECONSTRUCTIONS, ALTHOUGH IN A DIFFERENT ORDER (SEE TEXT)



SKULLS USED IN THE RECONSTRUCTIONS, THE ORDER OF THESE TWO ROWS CORRESPONDS

it was soon found that the usual measures could not be used for the substitute jaw, and the plastilina was put on quite without reference to the contours of the bone, the attempt being made only to present a jaw and chin similar to that of the other Indians, but weaker and more feminine. In doing this the substitute bone was left quite bare in places, while in others it was buried beneath a mass of plastilina which had no anatomical meaning, thus clearly showing the individual, and perhaps also the racial, character of skeletal parts.

Thus, in studying this historically important face, it must be constantly kept in mind that the jaw and chin, from the mouth down, are hypothetical; yet, if one cover this portion with the hand, it will be seen that the part thus supplied is non-essential, and scarcely alters the general expression. Any great departure in facial expression and contour from the present restoration could be occasioned only by the slight chance that the young woman may have had some very individual and peculiar type of jaw, like her associate, the Narragansett man, which is not likely. If these parts were originally of the usual type the young daughter of Sachem Ninigret must have looked very much as here presented.

To emphasize still further the personality of this Narragansett pair they are presented by themselves, on a somewhat larger scale, in plate XXVII. In this they are posed a little, to appear more as people are generally seen, and a bit of cloth is twisted about the head of the young squaw, to obviate the bald appearance of the restoration without hair. As a matter of fact, when exhumed, a large quantity of hair was still present; and even now, upon the more sheltered part of the occipital bone, there is a thin crust of foreign substance, which consists mostly of short pieces of hair, closely felted together, and bleached to a light yellow brown.

Concerning the Nonotuck Indians we have almost no historical account except the mark of a few of them upon local deeds mostly made out to the Pyncheon company at Springfield. They were more or less under the control of the more powerful Pocumtucks to the north of them, who possessed a chief settlement at or near the present Deerfield. Their restoration has thus a special interest, as it

supplies data that were supposedly lost forever. The face of the young man from North Hadley (pl. XXVIII) is an interesting type because of its extreme shortness and broadness. Measured upon the skull, the breadth between zygomatic arches (estimated, because of a deficiency upon the right side) is 137 mm., the same as in the larger skull of the other Nonotuck. This, when compared with a nasion-prosthion line of 63, gives a superior facial index of but 46. This index in the other Nonotuck is 53.3, and in the male and female Narragansetts respectively 52.6 and 56.4. Both from the physiognomy, the cranial capacity of 1275 c.c., and the absence of all associated artifacts in his grave (*American Anthropologist*, 1905, l. c.), it is safe to conclude that in this young man we have simply one of the rank and file, an ordinary person of low rank, and, probably, of limited intelligence. The cranial capacity of the other Nonotuck is 1473, and that of the Narragansett man is 1370. The little Niantic squaw, as would be supposed from the small size of the skull, has a small cranial capacity, only 1245 c.c., but the remarkably good frontal contour, the cerebral portion of which is very high, quite compensates for the lack of size, especially in a presumably small body, and argues a high degree of intelligence. If we compare this frontal contour (as taken with the Lissauer diagraph) with that of her three associates, we find that in her case the contour gives a frontal contour angle of 131° , as compared with the flatter angles of 132.7° for the large Nonotuck, 136.8° for her Narragansett associate, and 140° for the little, unintelligent man from North Hadley.

To these few anthropometric data, which are taken from a more extended work in preparation upon the skulls of New England Indians, there may be added the usual cranial indices, together with the total maximum length and breadth measurements. These, with the latter placed in fractional form, as in obtaining the cranial indices, are as follows:

1. Narragansett (male) $\frac{1}{1} \frac{26}{8} \frac{6}{5} = 68.3$.
2. Narragansett (female) $\frac{1}{1} \frac{27}{7} \frac{1}{4} = 78.74$.
3. Nonotuck (male). The larger one $\frac{1}{1} \frac{28}{8} \frac{3}{2} = 76.37$.
4. Nonotuck (male). The smaller one $\frac{1}{1} \frac{24}{8} \frac{4}{5} = 73.42$.



CASTS OF THE RECONSTRUCTED HEADS OF TWO (NAHAGANSETT INDIANS. THE ONE ON THE LEFT IS THE YOUNG DAUGHTER OF SACHEM NINEGRET, THE OTHER A MAN FROM CANONICUT ISLAND.

By this the Narragansett male specimen is shown to be extremely dolichocephalic, a striking character of the original skull, while the young squaw has an unusually broad head for a New England Indian. The others are more nearly the usual form, and this, as well as in the other features, appear as good types of their race.

In criticizing the actual value of the method of restoration the weak point is seen at once, namely, the opportunity for imagination on the part of the manipulator in the case of such features as the lips, the soft parts of the nose, and the setting of the eyes. The room for the personal equation is, however, not nearly so great as it would seem, for although not all the possible correlations between these soft features and the underlying and supporting hard parts are as yet known, at the same time the range of possibilities for the working of the imagination is seen to be much restricted when one attempts for himself an actual restoration.

In the nose, for example, the nasal bones often extend a long way down the profile, and give such a definite beginning to the outline that, with the terminal limit distinctly marked by the *akanthion*, there is practically but one possible way of completing the contour. The lower outline of the piriform fossa locates the point of attachment of the septum and the position of the two nostrils; and by the level of these last two, as well as by the shape of the bony septum, one can learn whether the nose was straight or scoliotic, and, in the latter case, to what degree. The breadth between the wings can be obtained with considerable exactness by obtaining the nasal index in the skull and ascertaining the index of the living face to which this value corresponds. For an exact correspondence we are perhaps not yet ready, but, to start with, the points generally accepted in each case as the boundaries between the classes of nasal indices may be taken as equivalent. Thus, on the skull a nasal index of 47 is the lowest number of the mesorrhine class, while in the case of the living this place is held by a nasal index of 70. Thus the numbers 47 and 70, in the two cases, skull and living, may be considered as about equivalent, and the same may be postulated of the indices 58 and 100 respec-

tively, which mark the entrance into the class of platyrrhine, or chamærrhine, noses. Starting with these as fixed points of comparison, it will be seen that every single point in skull indices corresponds to three on the living, or, beginning with $48 = 70$, we have $49 = 73$, $50 = 76$, and so on. Now, if these figures be taken as approximately correct, one can easily find from the nasal index of the skull that upon the face of the same individual while living, and since the length is the same in both conditions (nasion-akanthion), with the termini precisely indicated, one may thus readily obtain the exact breadth of the fleshy nose between the outer limits of the alæ.

With the mouth the data are at present somewhat less precise, but from a few observations upon the living, the oral slit, when the mouth is in repose, seems to coincide with the line formed by the edges of the upper teeth, and to extend upon each side to about the middle of the second premolar (bicuspid) tooth.¹ These points may be fixed upon the skull, while at work, by inserting pins or small toothpicks and fastening them in the proper position by plastilina. They will thus remain in place, and give the proper location for the external features, during the subsequent progress of the work and at any level to which the plastilina is built. When the mouth is nearly completed they may be withdrawn and the holes obliterated.

The size and fulness of the lips themselves, although not given directly, are strongly indicated by the fixing of the median points above and below them, the center of the hollow of the upper lip, which in the living is directly over the prosthion upon the skull, and the center of the transverse furrow of the chin, which marks the base of the lower lip. These points, with the slope of the alveoli and teeth, together with the exact position of the mouth slit, hedge the problem around with so many conditions that there is slight opportunity for the manipulator to vary his work, or to construct more than one type of mouth upon a given skull. In determining the two median surface points it might be better, in the

¹ Merkel determined a constant direct relation between the extent of development of the jaw muscles and the length of the oral slit.



PLASTILINA RECONSTRUCTION OF A YOUNG NANTUXUK MAN FROM NORTH HADLEY, MASS. EXHIBED BY SMITH COLLEGE IN 1901



CAST TAKEN FROM THE PLASTILINA RECONSTRUCTION SHOWN AT THE LEFT, AFTER FINISHING

case of a negro skull, to use the measurements given for the Hereros, but even with European measures, as were employed in the two negro reconstructions given here, the thickness of the lips seems sufficiently marked, with only the slant of the alveolar surfaces as a basis.

The construction of the eyes became transformed from an unsatisfactory sort of guesswork to a simple and fairly precise piece of work by a method which developed during the course of my study, and the result will appeal to one from the underlying anatomical principles upon which it is based. For each orbit I construct a plastilina eyeball, of the proper size to allow a sufficient space for the eye-muscles, glands, and other surrounding structures, and fix this immovably upon a little bed of cotton, previously packed into the deepest part of the orbit. In the placing of this eyeball there is still some lack of precision in its forward and back location, yet it will be seen from the study of living people that in most cases a wooden ruler or other firm object with a straight edge may be placed vertically over the closed eye and just come into firm contact with the superciliary ridge, the lower lip of the orbit, and the surface of the lid-covered eyeball. As all three points of contact are covered with skin of approximately the same thickness, this means that, on the average, the plastilina eyeball should be set in until the upper and lower lips of the bony orbit and the front surface of the ball are in line.

As a check upon this we have the orbital index (I use the Adachi method), and where this is large, indicating a round orbit and a large, full eye, I allow the ball to project a little, while in the opposite case it may be sunk in, a little back of the usual position. Indians, for example, are generally hypsiconch (megaseme), with large and projecting eyeballs, and in life the form of these latter is often seen through the skin considerably beyond the palpebral opening.

The position of the two canthi is almost precisely determined, the inner by the naso-lacrymal duct, and the outer by a slightly but definitely indicated "malar tubercle," to which attention has recently been called by Whitnall.¹ As in the case of the features

¹ *Journal of Anat. and Physiol.*, 1911.
AM. ANTH., N. S., 14:23

of the mouth, these points can be kept through all the manipulations by means of pins.

Having determined so much, after the external skin surface has been laid on entirely around the orbit, as far as its margin, the surroundings of the eye may be completed by laying on the lids. These are best made by themselves, of an approximately proper size and thickness, and then fitted to the conditions after being laid on. Here, as elsewhere, the final finishing is done by means of the usual wooden tools which sculptors employ, cut into various shapes, and consists mainly of cutting and smoothing the free edges of the lids, smoothing the eyeball, emphasizing the canthi, and so on. The final result is an eye of some anatomical detail, the essential parts of which are definitely determined from indications furnished by the skull.

For the external ear I have as yet no data other than that of position, as given by the auditory opening. In this it must be observed, as pointed out by Welcker in 1883 (*Schiller's Schädel*, p. 61), that the openings of the external ear and of the skull do not coincide, but that the latter lies upon the average 5.3 mm. farther back, and the same distance higher than the other. Much is to be expected of the careful study of the external ear of different races, as now investigated by Bean, so that in the future it will be possible to add to a reconstruction at least the conventional ears of the race to which the individual belongs. In the case of the young Indian from North Hadley I have purposely set the ears well out, since the face and head seem to suit that form. The case is wholly without other basis, but with regard to both this and the other reconstructions it is to be observed that in a head shorn of hair, as these all are, the external ears appear more prominent than when the hair is present.

Undoubtedly a more detailed study of these special features—nose, mouth, and eyes—in a large number of bodies, and the subsequent study of the macerated skulls of the same individuals, would add greatly to our knowledge of the definite points indicated in the bone, and would render the reconstruction of these features much more exact than at present. There are undoubtedly many

more correlations between the soft features and the underlying hard parts that we have not yet learned to read, since, theoretically, every change in the first, in a region where the two are so intimately associated as in the face, must cause corresponding modifications of the latter. The droop of a lip, or increased weight in an eyelid, presumably brings with it some change in the underlying bone, and these correlations we may sometime learn to read.

It is very probable, too, that we may obtain some help from an allied line of investigation now being extensively followed, namely, the study of the facial muscles in the different human races (Ruge, Popowsky, Förster, Fischer, von Eggeling, Loth, and many others). The facts thus obtained will be of direct service in informing us which lines to emphasize, and which surfaces to strengthen in building up the faces of different racial types, and will probably serve to guide us to many of the correlations we seek by pointing out the places where such are likely to be found.

In two points only, that of the bodily condition of the subject, whether well-nourished or emaciated, and that of the presence and location of wrinkles, two closely associated superficial characters that differ at times in the same individual, can the skull not be expected to furnish much information; and inasmuch as these details, superficial as they are, are generally much relied upon in the sight recognition of individual faces, the method here discussed will always, to the unscientific, have its deficiencies. Even here, however, certain of the deeper folds and wrinkles can be inferred from the general relations and amount of development of the other parts, and assuredly many of the traces of senility are very apparent in the bones. It is thus quite warrantable for us to adopt even the extreme view of Holl, that "*der Formenreichthum der skeletirten Gesichtsschädel ist ein so grosser, dass jeder dieser eine bestimmte Physiognomie aufweist; sie sind von einander gerade so verschieden, wie es die Gesichter der Lebenden sind.*"¹

This extreme individuality of the bony faces in skulls is not easy to recognize, since not even a professional craniologist experiences the daily and hourly drill in the selection and comparison

¹ M. Holl, Ueber Gesichtsbildung, in *Mitt. anthrop. Ges. in Wien*, 1898, p. 57.

of features which we all of us experience from our infancy in the case of faces, but by spreading over a skull a plastic mass of a definite thickness the surface with which we are all familiar is brought out, and the individuality at once appears.

As a method the results seem, at least, satisfactory, but it needs not only many new observations concerning the correlation of hard and soft parts, but also a large number of tests like that of the negro skull above mentioned, where, by death-masks, photographs, or actual acquaintance, the appearance in the flesh may be put on record, and compared with the completed restoration, made by an operator kept in ignorance of the records.

When perfected, there is practically no end to the application of this reconstruction method. Not only is there an important medico-legal aspect of the case, in the numerous instances in which the identity of a given skull comes in question, but the same question comes up frequently in such cases as those of Bach and Schiller. Of the 278 skulls recently obtained from the wreck of the *Maine* but few could be identified, and these only by swords and other associated objects. Had the skulls been reconstructed by this method, it is probable that with the coöperation of relatives and former friends, but very few would have remained unidentified.

Other important applications are the reconstructing of ancient or prehistoric skulls, like those of the ancient Cretans, Oscans, Etruscans, and so on, or those of the Romans of classic times, notably those from Pompeii. These latter would be of especial interest, since they could be directly compared with the sculptured portraits found in association with them, occasionally, perhaps, portraits of the same individuals or of near relatives. The Roman Church, also, has preserved as relics many an ancient skull, with a more or less authentic record, and in such cases the historical interest might often be considerable.

There is much need of work in this direction, and the writer of this paper would welcome any coöperation. The method itself is so simple that it can be readily performed by any one who follows the directions here given, and the very first attempt cannot help being at least moderately successful. The subject is already receiving

considerable attention in Europe, as may be seen by the work of the last session of the Anatomische Gesellschaft at Munich (April 1912), the program of which included the presentation of the genuine skull of Schiller by Fritsep, as already referred to, and the demonstration of several new plastic reconstructions by von Eggeling. In the skulls of our aborigines we in America have some interesting and important material, the study of which may thus be furthered.

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SMITH COLLEGE

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THE ABORIGINAL USE OF TURQUOIS IN NORTH AMERICA¹

By JOSEPH E. POGUE

INTRODUCTORY

THE use of turquoise in North America, apart from its modern application in jewelry, has been confined to Central America, Mexico, and the southwestern portion of the United States, and within this territory it has been known and prized for centuries. At the time of the Spanish conquest there were, broadly speaking, three somewhat distinct groups of aborigines within this region: the Zuni, Hopi, and allied tribes dwelling in pueblos in the elevated plateau of New Mexico, Arizona, and northern Mexico; the Nahuatl tribes, commonly designated as Aztecs, with a higher degree of culture than the Indians to the north, occupying the mountainous region of Mexico; and the Maya, Quiché, and kindred peoples of Central America. In all three provinces the turquoise found both a religious and an ornamental use, and there are striking analogies between its application among widely separated tribes. With the passing of the ancient Nahuatl and Mayan cultures, however, the use of the turquoise dwindled to unimportance south of the northernmost provinces of Mexico; but not so in the Pueblo region, where the mineral holds the same high place today that it did centuries ago.

The information concerning the use of turquoise by modern Indians is drawn from writings of ethnologists and other observers, and study of the objects themselves, a number of which are in the

¹ Published by permission of the Smithsonian Institution.

This paper is extracted from the manuscript of a forthcoming work in which the writer attempts to present the available information bearing on the history, ethnology, mythology, and folklore, as well as the mineralogy, geology, and technology of turquoise. He realizes that many facts of interest have escaped him, and will be grateful for suggestions and data, not only relative to the subject of this paper, but to turquoise in general.

ethnologic collections of the United States National Museum.¹ The evidence for deducing the application of turquoise among the ancient tribes is derived from two different and wholly independent sources: firstly, the objects now existing in various collections and available through accurate descriptions; secondly, the writings of the old Spanish chroniclers, who were first-hand observers of the actual conditions. A few words concerning the relative weight of the two classes of evidence: The first, in most instances, can hardly be questioned; the turquoise in the objects described has in many instances been identified as such by competent mineralogists. The historical evidence is more open to doubt: we cannot always be sure that the precious stone described as turquoise is really such. The descriptions of it are sometimes confusing and conflicting, and were the historical accounts the only basis the entire ancient use of turquoise might be open to reasonable doubt. So many turquoise objects are known, however, and some of these so closely fit the descriptions of the old writers, that the historical evidence, by corroboration, assumes a weight it would not have alone and in the main can safely be accepted.

In the old Spanish writings there is frequent mention of a green precious stone prized by the Aztecs and called by them *chalchihuitl* (pronounced *chal-che-we'-tl*). This has been the subject of much discussion, some maintaining that it represents jade, others that it was turquoise, others that it was in part jade and in part turquoise, still others that the term included many varieties of green gems, and so on. This subject will receive special treatment elsewhere; it is possible here only to state the conclusions reached by the writer, namely, that the early writers confused several green stones under this term; the natives, however, used it more strictly to designate one of their most valued precious stones, in the Southwest this being turquoise, in Mexico and Central America probably jade. The uses of *chalchihuitl* and turquoise were very similar, and in discussing the latter an occasional allusion to the former cannot be avoided.

¹ The writer had occasion to spend three months among the Navaho and Hopi of northern Arizona in 1910 and was afforded good opportunity to observe the use of turquoise among these tribes. He has also inspected with profit the ethnologic collections in the British Museum and the Berlin Museum of Ethnology.

It may be useful to bear in mind the relative, rather than the absolute, antiquity of the races which have used turquoise.¹ For example, the culture of Mexico at the time of the conquest was more archaic than that of Egypt under the Pharaohs, and certain of the tribes of our Southwest, the Hopi, for example, are almost as primitive today as the dwellers in the lake-villages of Switzerland during Neolithic times.

THE USE OF TURQUOIS IN MEXICO AND CENTRAL AMERICA
Use as Attested by Historical Evidence

The first European to come in contact with turquoise in the New World was probably Juan de Grijalva, the discoverer of Yucatan. According to Gomara,² he secured by barter from the natives of this country in 1518 three gilded masks of wood, covered with mosaics of turquoise. It is not unlikely that one, if not all, of these is in existence today.³ Proceeding on the same expedition to San Juan de Ulloa, Grijalva obtained further ornaments from the natives, including four turquoise-incrusted ear pendants and five gilded mosaic masks (nature of mosaics not described).

It was in the following year that Fernando Cortés made the first of a series of daring moves that so quickly resulted in the overthrow of the "Aztec Empire". It is related that upon landing at San Juan de Ulloa he was met by numbers of natives, of whom it was observed⁴ that "Among the rest or rather aloof from the rest were certain Indians of differing habit, higher than the other and had the gristles of their noses slit, hanging over their mouths, and rings of jet and amber hanging thereat: their nether lips also bored and in the holes rings of gold and Turkesse-stones⁵ which weighed so much that their lips hung over their chins leaving their teeth bare.

¹ For a good discussion of the degrees of culture embraced by the terms savagery, barbarism, and civilization, consult Fiske, *The Discovery of America*, Boston, 1892, vol. 1, pp. 24-38.

² *Histoire générale des Indes Occidentales, et Terres Neuves*, French trans. by M. Fumée, Paris, 1606, pp. 64, 65.

³ See pages 450, 451.

⁴ Purchas, *Pilgrimes*, London, 1626, vol. v, book 8, chap. 9, p. 859, quoted by Dall, *3d Ann. Rep. Bur. Ethnol.*, 1881-82, p. 85.

⁵ The custom of wearing labrets of turquoise was also practised in South America.

These Indians of this New Cut Cortez caused to come to him and learned that they were of Zempoallan a citie distant thence a dayes journey whom their Lord had sent; . . . being not subject to Montezuma but onely as they were holden in by force."

Cortés immediately dispatched envoys to enter into negotiations with Montezuma, ruler of the Aztecs, who returned ambassadors to the Spanish camp, bearing princely gifts. Sahagun¹ enumerates in detail these presents, and his inventory includes: (1) A mask, incrustated with a mosaic of turquois, carrying upon it a snake, coiled and twisted, worked of the same stone; (2) A bishop's crozier² all made of turquois in mosaic work, and terminating in a coiled snake's head; (3) Large earrings of chalchihuitl, in serpent design; (4) A mitre² of ocelot's skin, surmounted by a large chalchihuitl, and decorated with turquois mosaic, and (5) A staff² adorned with mosaic of turquois.

According to other accounts,³ Montezuma later sent further gifts, intended for the Spanish King, including four chalchihuitls, each, according to the estimates placed upon them by the Mexicans, "worth a load of gold." The identity of the four stones cannot be definitely settled. Kunz,⁴ however, remarks that "it is a well authenticated fact that the gems referred to were turquoises, and it is believed that they are among the crown jewels of Spain."

The Spaniards soon penetrated to the high plateau of Mexico and seized the personage of Montezuma. They found the turquois esteemed throughout the country, and the many uses to which it was put are recorded in the writings of their chroniclers.

The turquois was employed not only as an ornament, but found an important religious and ceremonial application as well. A

¹ *Histoire générale des choses de la Nouvelle-Espagne*, French trans. by Jourdanet and Siméon, Paris, 1880, pp. 799-800.

² These were among the insignia of Quetzalcoatl and their presentation to Cortés suggests that the latter was thought to be this fair-skinned god, returning from the east as had been prophesied. Mrs Nuttall (*The Atlatl or Spear-thrower, Peabody Museum Papers*, Cambridge, 1891, vol. 1, no. 3, pp. 21-23) deems these examples to be a form of atlatl, or spear-thrower, and states, "It appears that all three were sent to Europe."

³ Clavigero, *History of Mexico*, Cullen's trans., Phila., 1817, p. 282. *The Memoirs of Bernal Diaz*, Lockhart's trans., London, 1844, vol. 1, p. 93.

⁴ *Gems and Precious Stones*, New York, 1890, p. 63.

Nahuan king was interred with great pomp, a mask either painted or of gold, or of turquoise mosaic, being placed over his face.¹ A pendant of turquoise hung from the underlip of Topiltzin, the chief of six priests customarily engaged in human sacrifice;² "under the lip upon the midst of the beard hee had a peece like unto a small canon of Azured stone."³ In the month of Izcalli a feast was celebrated in honor of Xiuhtecutli,⁴ the God of Fire, and an image of this Aztec Vulcan was adorned in fine raiment; from its ears hung pendants wrought in mosaics of turquoises,⁵ and its left hand grasped a shield surmounted by five green chalchihuitl stones placed in the form of a cross upon a gold plate.⁶

Quetzalcoatl, Lord of the Winds, and the mysterious hero-god of the Mexicans, is supposed to have introduced the art of working precious stones.⁷ In the sacrifices and fetes held in his honor he is represented as wearing blue turquoise earrings in mosaic.⁸ He was worshipped as the god of commerce by merchants who bought, sold, and worked in precious stones.⁹ According to tradition the palace of this personage was composed of four apartments, lavishly decorated; the easternmost one "called the hall of emeralds and turquoises, because its walls were embellished with stones of all kinds arranged in mosaics of wonderful perfection."¹⁰ Catmaxtli, the father of Quetzalcoatl, was adorned with a mask of turquoise mosaic during the feast of Catmaxtli.¹¹

¹ Bancroft, *Native Races of the Pacific States of North America*, New York, 1874, vol. II, p. 606. "Speaking of the obsequies of Tezozomac of Azcapuzalco, Ixtlixochitl says that a turquoise mask was put over his face . . ." *Relaciones*, in Kingsborough, *Mex. Antiq.*, vol. 9, p. 370. Veytia states that it was a gold mask "garnecida de turquesas."—*Hist. Ant. Mex.*, tom. IV, p. 3.

² Clavigero, loc. cit., 1817, vol. II, p. 52.

³ Purchas, *Pilgrimes*, London, 1626, vol. V, book 8, chap. 9, p. 871, quoted by Dail, *3d Ann. Rep. Bur. Ethnol.*, 1881-82, p. 85.

⁴ *xuitl* = turquoise, herb, year, or comet, and *tecutli* = lord.

⁵ Sahagun, loc. cit., p. 27.

⁶ *Ibid.*, p. 30.

⁷ Torquemada, *Monarchia Indiana*, Madrid, 1723, vol. II, p. 48.

⁸ Sahagun, loc. cit., p. 16.

⁹ Peñafiel, *Monuments of Ancient Mexican Art*, Berlin, 1890, p. 12.

¹⁰ Sahagun, loc. cit., vol. 2, p. 650. See also Bancroft, loc. cit., vol. 2, p. 173. Emerson, *Indian Myths or Legends*, Boston, 1884, p. 9. Nuttall in *Peabody Mus. Papers*, Cambridge, 1901, vol. II, p. 204.

¹¹ Bancroft, loc. cit., vol. 2, p. 314.

Each Aztec god was represented as carrying some form of atlatl, as a symbol,¹ and these objects, fashioned in snake design and inlaid with turquoises, were in ceremonial use at the time of the conquest. In the great festival in honor of Quetzalcoatl, his high priest was preceded by a "mace-bearer with a sceptre shaped like a monstrous serpent, all covered with mosaic composed of turquoises."² Similar insignia were presented to Cortés by Montezuma, as has been noted. The serpent-shaped atlatl of the hero-god Huitzilopochtli was called *Xiuatlal*, meaning blue or turquoise atlatl.³

The ornamental use of turquoise was no less interesting. Montezuma, as high-priest and representative of a god, wore necklaces of precious stones, fine and large, consisting of chalchihuitls and turquoises of finest quality.⁴ The latter, indeed, were of such value that they could be worn only by the first of the land. The dress of the nobles is thus described by Sahagun:⁵

"The Mexican lords wear wrist bands of black leather made pliable with balsam, and decorated with strings of chalchihuitl or other precious stones. They used to wear chin ornaments of chalchihuitl set in gold and implanted in the flesh. Some of the ornaments are large crystals with blue feathers in them, which gives to them the aspect of sapphires. They wear many other precious stones protruding through openings made in the lower lip. The noses of the great lords are also pierced and they wear in the openings fine turquoises and other precious stones, one on each side."

Annually the tribes under the dominion of Montezuma were required to pay tribute, including jewelry and ornaments of great value. As recorded in the "Book of Tribute" and translated by Peñafiel,⁶ these consisted of a "gold circle, gold diadem, gold necklace, pearls of chalchihuitl, masks of turquoise stone, turquoise stone not cut, stones of rock crystal with shades of blue and with gold mounting, pendants of beryl enamelled in blue, and with gold

¹ Nuttall in *Peabody Mus. Papers*, Cambridge, 1891, vol. 1, no. 3, p. 29.

² Sahagun, loc. cit., p. 169. See also Nuttall, 1891, loc. cit., p. 23.

³ Nuttall, 1891, loc. cit., p. 188.

⁴ Sahagun, loc. cit., p. 514. Nuttall in *Peabody Mus. Papers*, Cambridge, 1888, vol. 1, no. 1, pp. 1-52.

⁵ Loc. cit., p. 511.

⁶ *Monuments of Ancient Mexican Art*, Berlin, 1890, p. 79.

mounting, and plates mounted with turquoise stones." Included also therein, according to Clavigero,¹ were "ten small measures of fine turquoises and one cargo of ordinary turquoises." It is known from the Chronicle of Tezozomoc² that in the 15th century the Mexicans imported shields and ear-plugs bedecked with turquoise mosaics from the people of the Zapotecan tribes and accepted them as tribute.

Very little historical information is available regarding the nature and occurrence of the turquoise employed by the old Mexicans. Sahagun³ writes:

"The turquoise occurs in mines. There are some mines whence more or less fine ones are obtained. Some are bright, clear, fine and transparent; while others are not."

Again:

"Teoxiuitl is called turquoise of the gods. No one has a right to possess or use it; but it must always be offered or devoted to a divinity. It is a fine stone without any blemish and quite brilliant. It is rare and comes from a distance. There are some which are round and resemble a hazel-nut cut in two. These are called xihutemalli."⁴

In another place⁵ he says:

"There is another medicinal stone called xihutemolteitl (from *xiahtemalli*, turquoise, and *teitl*, stone), which is green and white at the same time like chalchihuitl. It is very beautiful. Its moistened scrapings are good for feebleness and nausea. It is brought from Guatemala and Xoconuchco. They make it into strings for hanging around the neck."⁶

Finally, in relating the traditions of the first settlement of Mexico by the natives, Sahagun⁷ states:

¹ *Historia antigua del Mexico*, Cesena, 1780.

² See Lehmann in *Globus*, vol. 90, 1906, p. 322.

³ Loc. cit., p. 771. From this description one would suppose that Sahagun's "turquoises" included more than one mineral, for turquoises are not transparent.

⁴ Sahagun, loc. cit., p. 772.

⁵ Loc. cit., p. 763.

⁶ In a manuscript copy of Sahagun in Madrid (quoted by Selet, *Gesammelte Abhandlungen zur amerikanischen Sprach- und Alterthumskunde*, Berlin, 1904, vol. 2, p. 637) it is stated that the turquoise was not very hard and that it was first polished with fine sand and then with another polisher. Emery was not utilized as with many other precious stones.

⁷ Quoted by Peñafiel, *Monuments of Ancient Mexican Art*, Berlin, 1890, pp. 26-28.

"The Toltecs also discovered the mine of precious stones, called in Mexico Xivitl (Xihuitl), which means turquoise. This mine, according to the ancients, was in a large hill situated near the village of Tepotzatlán. . . . At present the same name is borne by an inhabited village near Tulla."¹

Use as Attested by Objects

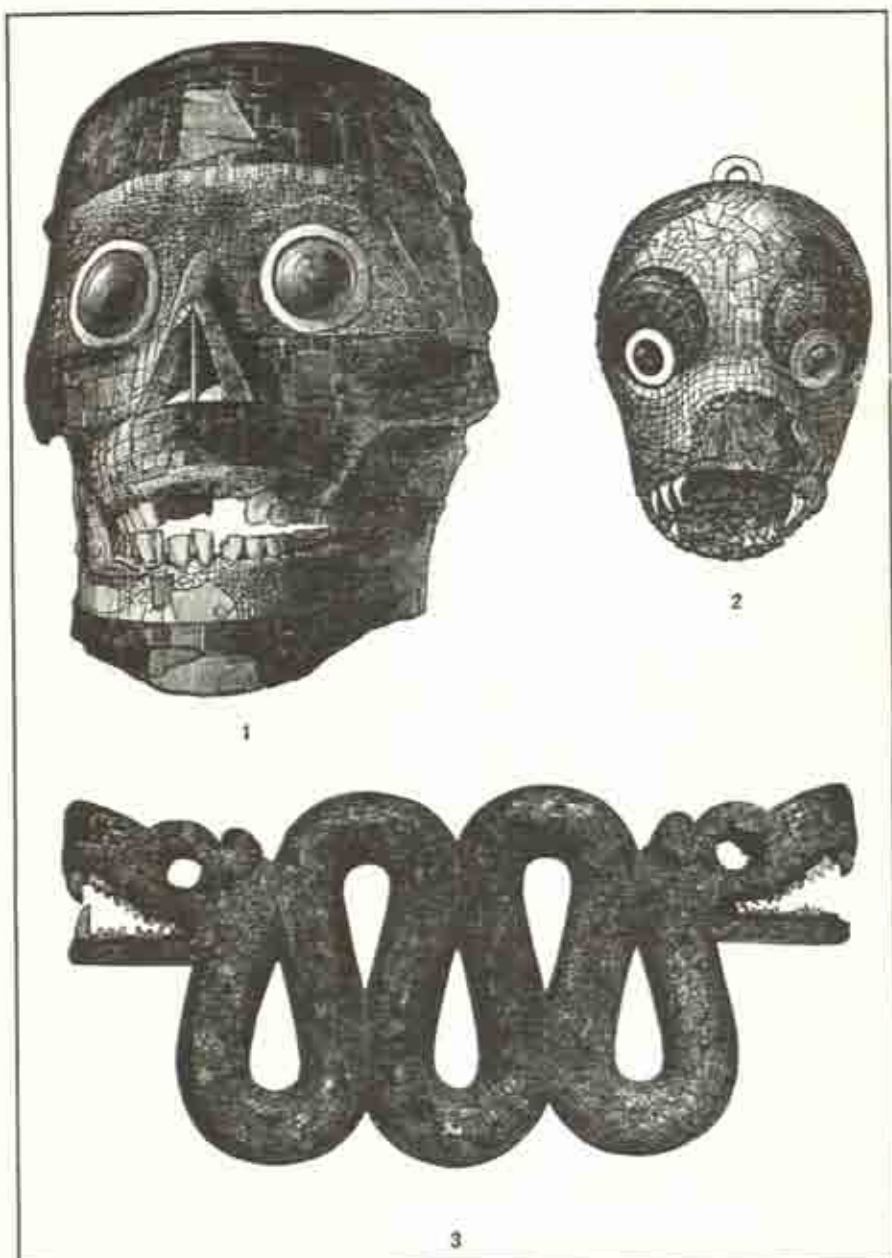
Turquoise has been identified in a number of objects originating within the region of ancient Aztec dominion and coming from farther south in Central America. Its presence substantiates, to an important extent, the historical descriptions of its use as developed in the preceding section, and attests the position it held at the time of the Spanish conquest.

Mosaics.—One of the most interesting and highly developed arts in prehistoric America was that of incrusting objects for ceremonial and ornamental purposes with precious and semi-precious stones.² Ancient mosaics, showing skill in workmanship and taste in design, are to be seen in many of the leading museums. This form of art reached its highest development in ancient Mexico (including Central America), although excellent examples are known from ruins in the southwestern portion of the United States, and objects from Peru inlaid with turquoise³ indicate a similar, though less perfected, application in South America. The materials usually employed were turquoise, jadeite, malachite, quartz, beryl, garnet, obsidian, pyrite, gold, and vari-colored shell, cemented to a base of wood, bone, or stone by means of a tenacious vegetal pitch of local origin. Only twenty-four examples from Mexico and Central America are now known. As a result of a peculiar coincidence of circumstances, twenty-three of these are to be found in European museums, most of this number having reached the continent during Spanish occupancy of the region in question. The best preserved of these objects are very beautiful and are among the highest types of art attained in aboriginal America.

¹ Not far from Mexico City.

² Gomara (*Histoire générale des Indes Occidentales, et Terres Neuves*, trans. into French by Fumée, Paris, 1606, p. 46) refers to the Aztec custom of inlaying figures and masks of wood with various colored stones.

³ Joyce in *American Anthropologist*, vol. 10, 1908, pp. 16-23. Joyce, *South American Archaeology*, London, 1912, p. 206.



ANCIENT MEXICAN INLAID OBJECTS

1. Mask. Human skull inlaid with turquoise and obsidian. British Museum. (After Read.)
 2. Pendant. Ape-like head of wood inlaid with mosaic of turquoise and other stones. British Museum. (After Read.)
 3. Beaded ornament of wood covered with turquoise mosaic. British Museum. (Photo supplied by T. A. Joyce.)

The mosaics are distributed as follows: Nine¹ in the Christy Collection of the British Museum in London; five² in the Prehistoric and Ethnographical Museum in Rome; three³ in the Royal Museum for Ethnology in Berlin; three⁴ in the Imperial Museum in Vienna; two⁵ in the Ethnographical Museum in Copenhagen; one⁶ in the Ducal Museum in Gotha; and one⁷ in the United States National Museum at Washington. These will be described briefly in the order given, followed by a discussion of their origin and significance.

Of the nine specimens in the British Museum, the most interesting and best known is the mask shown in pl. XXIX, 1. It consists of a human skull, the front of which is covered with a mosaic of five transverse bands alternately of turquoise⁸ and highly polished obsidian. The rear portion has been cut away to admit of its being hung, by the leather thongs which still remain, over the face of an idol, as was the custom in Mexico to mask the gods on state

¹ Tylor, *Anahuac or Mexico and the Mexicans, Ancient and Modern*, London, 1861, app. 5, pp. 337-339. Bourbourg, *Recherches sur les ruines de Palenqué et sur les origines de la civilisation du Mexique*, Paris, 1866. Franks, *Guide to the Christy Collection, British Museum*, 1868. Stevens, *Flint Chips*, London, 1870, pp. 324-328. Brocklehurst, *Mexico Today*, London, 1883, p. 194. Read in *Archæologia, Soc. Antiquaries*, London, vol. 54, 1895, pt. 1, pp. 383-398. Oppel in *Globus*, vol. 70, 1896, pp. 4-13. Lehmann in *Globus*, vol. 90, 1906, pp. 318-322.

² Pigorini, *Gli antichi oggetti messicani incrostatì di mosaico*, Reale Acad. dei Lincei, Rome, 1885. Andree, *Ethnographische Parallelen und Vergleiche*, Leipzig, 1889, pp. 127-130. Read, loc. cit. Oppel, loc. cit. Peñafiel, *Indumentaria Antigua; Vestidos Guerreros y Cíviles de los Mexicanos*, Mexico, 1903, pp. 101-103. Bushnell in *American Anthropologist*, vol. 8, 1906, pp. 243-255. Lehmann, loc. cit.

³ Bastian in *Verh. Berliner Gesellsch. Anthropol.*, 1885, p. 201. Uhle in *Congrès intern. Américanistes*, 7me sess., 1888, Berlin, 1890, p. 738. Uhle in *Veröff. Kgl. Museum für Völkerkunde*, Berlin, 1889, pp. 2, 20. Andree, loc. cit. Peñafiel, 1903, loc. cit. Lehmann, 1906, loc. cit. Lehmann in *Congrès intern. Américanistes*, 15th sess., Quebec, 1906, vol. 2, 1907, pp. 339-349.

⁴ Steinhilber, *Handkatalog für die Benutzenden*, Copenhagen, 1880, p. 19; 1886, p. 22. Heger in *Annalen des k. k. Naturhistor. Hofmuseum*, Wien, vol. 7, 1892, pp. 379-409. Lehmann, 1906, loc. cit.

⁵ Duc in *Archives de la commission scientifique du Mexique*, Paris, 1867, vol. 3, pt. 1, pp. 157-158. Anon., *Congrès International d'anthropologie préhistorique*, C.-R., 4me sess., Copenhagen, 1869, p. 462. Stevens, loc. cit. Andree, loc. cit. Lehmann, 1906, loc. cit.

⁶ Andree, loc. cit. *Ibid.*, *Internat. Arch. für Ethnogr.*, vol. 1, 1888, pp. 214-215. *Ibid.*, *Congrès intern. Américanistes*, 7th sess., 1888, Berlin, 1890, pp. 146-149.

⁷ Blackiston in *American Anthropologist*, vol. 12, 1910, pp. 536-541.

⁸ Read, loc. cit.

occasions.¹ The eyes are disks of shiny pyrite surrounded by circles of white shell; and the nasal cavity has been slightly enlarged, with the insertion of pink shell.² This interesting object was acquired from the Hertz Collection, having previously been obtained about the year 1845 at a sale of a collection in Bruges, suggesting that it was brought from Mexico soon after 1521 and before the expulsion of the Spaniards from Flanders during the revolt of the Low Countries in 1579.³ No. 2 (pl. xxx, 1)⁴ is a mask of cedar wood, formed of two rattlesnake carvings entwined to represent a human face. The front is covered with a mosaic of turquoise, of bright blue and dull green color, so distributed as to give to the two snakes a different shade. The specimen is 6.9 inches high and was purchased in Paris in 1876 from the Demidoff Collection. No. 3 (pl. xxx, 2)⁵ is a mask of cedar cut to fit the face; its surface is covered with a beautiful mosaic of accurately fitted, polished slabs of turquoise, mostly of a brilliant blue. The face is studded with numerous knobs of polished turquoise, and the eyes are mother-of-pearl.⁶ The specimen, which is in an excellent state of preservation, came from a collection in Florence or Venice. No. 4⁷ is a sacrificial knife with blade of yellowish, opalescent chalcedony. The handle is of light-colored wood carved in the form of a crouching human figure, wearing an eagle mask, its face appearing through the widely opened mouth of the bird. The figure is incrustated with a mosaic of turquoise, blended with malachite and white and red shell; much of the mosaic has now disappeared from its setting. This piece was previously in the Hertz Collection, having been acquired in Florence or Venice. No. 5⁸ is a headpiece, or helmet, cut from a single block of wood with the interior hollowed and painted green. It is carved in ornamental shape, pointed at the

¹ Tylor, *loc. cit.*

² The mask is figured in colors in the publications by Bourbourg and Brocklehurst, previously cited.

³ Tylor, *loc. cit.*

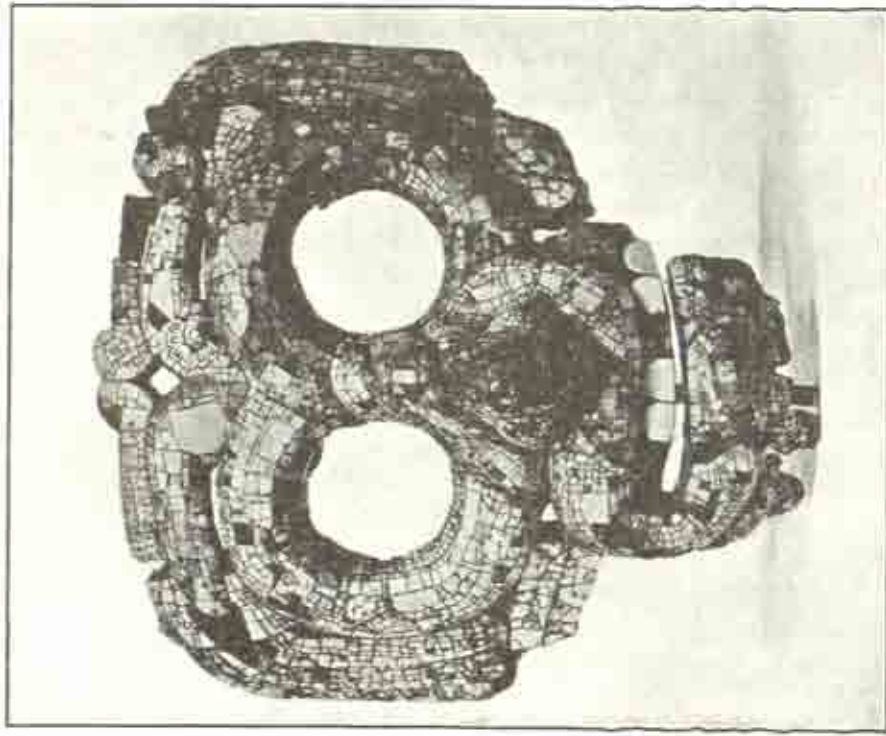
⁴ Read, *loc. cit.*

⁵ *Ibid.* Tylor, *loc. cit.*

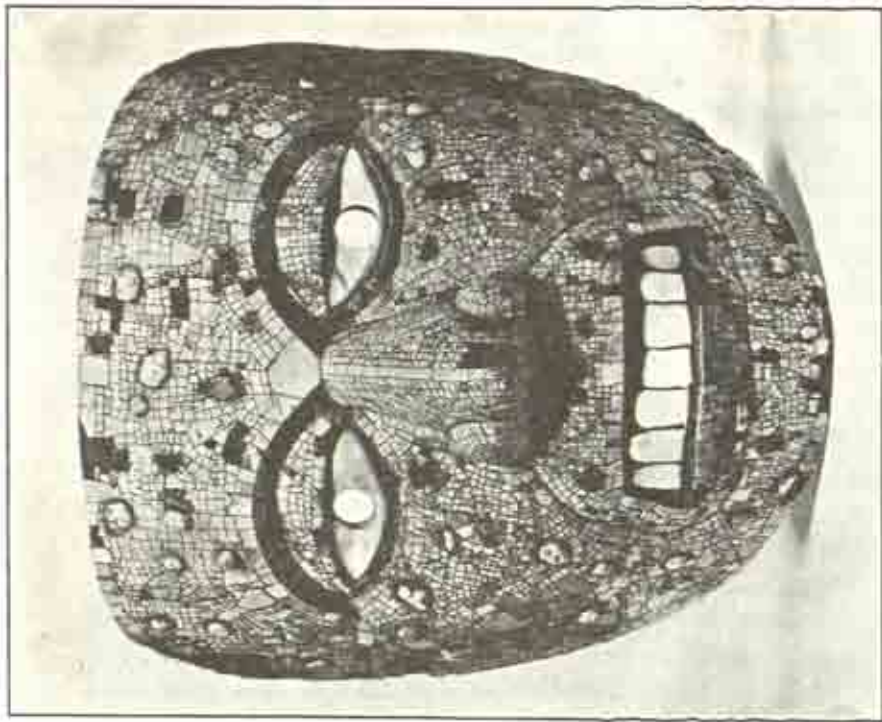
⁶ Figured in colors in Bourbourg.

⁷ Tylor, *loc. cit.* Read, *loc. cit.*

⁸ Read, *loc. cit.*



1



ANCIENT MEXICAN MASKS OF WOOD COVERED WITH MOSAIC OF TURQUOISE. BRITISH MUSEUM. (PHOTOGRAPHS SUPPLIED BY T. A. JOYCE)

back and front, probably to represent the upper mandible of an eagle, and was covered with a mosaic of turquoise, malachite, pearl shell, and pink shell. Much of the mosaic is gone, but sufficient remains to show an involved design, including two conventional rattlesnakes. Its history may be traced back to 1854, when it was purchased in Paris. No. 6¹ consists of a circular disk or shield of cedar, about 12 inches in diameter, with a mosaic of turquoise and shell in elaborate design, including the snake, human figure, and geometric patterns. This example was purchased in 1866 from a dealer, who stated that it came from Turin. It resembles in design the famous "Reloj de Montezuma" or calendar-stone in Mexico City. No. 7² is a pendant of white wood, 4 inches high, carved to represent an ape-like head, with open mouth, as shown in pl. XXIX, 2. The front is covered with a mosaic of turquoise, malachite, and other stones. The turquoise is mostly of a pale green color, but two patches above the sides of the mouth are a bright blue. This specimen was obtained in 1866 from a dealer who had secured it in northern Italy. No. 8³ is a breast-ornament of light-colored wood, fashioned in the form of a two-headed snake with body disposed in meander loops (see pl. XXIX, 3). It is 17.5 inches in length, and is covered on the front with a mosaic of fairly uniform turquoise slabs, with a line of larger pieces following the middle of the body. It was obtained from an old collection in Rome. No. 9,⁴ the final example, consists of the figure of a feline animal, with open mouth and protruding tongue, crouching upon its haunches. It is 6.8 inches in height, and was carved from a block of brown wood; its surface shows the remains of a mosaic of turquoise, malachite, pink shell, and pyrite. Its history is not known.

The five incrustated objects in Rome have been described and illustrated in colors by Pigorini,⁵ and a photographic reproduction of them is shown in pl. XXXI of this paper. They include two

¹ Read, *loc. cit.*

² Read, *loc. cit.*

³ Read, *loc. cit.*

⁴ Read, *loc. cit.*

⁵ *Loc. cit.*

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masks, two knife-handles, and a musical instrument or rattle. Mask No. 1 (pl. XXXI, 3) is made of wood, the back hollowed out to fit a human face, and the outside incrustated with a partly preserved mosaic consisting of malachite, turquoise, red, white, and blackish shell, and pearl shell, besides a little garnet and several squares of pyrite. The eye cavities and half-open mouth are colored red, and out of the latter issue two white tusks and a tongue, which projects to the chin, where it joins an appendage below, resembling the head of an animal. The piece was acquired in 1878 from the University of Bologna; during the 17th century it was in the collection of Aldrovandus.¹ Mask No. 2 (fig. 4) is somewhat similar to that just described, although its back is not hollowed out. It was obtained in Florence in 1880, and its history can be traced by inventories back to the middle of the 16th century, the first mention of it being in the *Inventario della Guardaroba Medicea* (1553-1559). The two knife-handles (figs. 1 and 2) are in the form of crouching figures, the one human, and the other with a human body and an animal's head with widely open mouth. Both are entirely covered with mosaic of turquoise and other minerals, and are somewhat similar to the knife-handle in the Christy Collection in the British Museum. These two pieces are figured in an old catalogue of 1677.² The musical instrument or rattle (fig. 5) is made of a human femur, with the ball covered with mosaic, a few pieces of which still remain. Its history is not known.

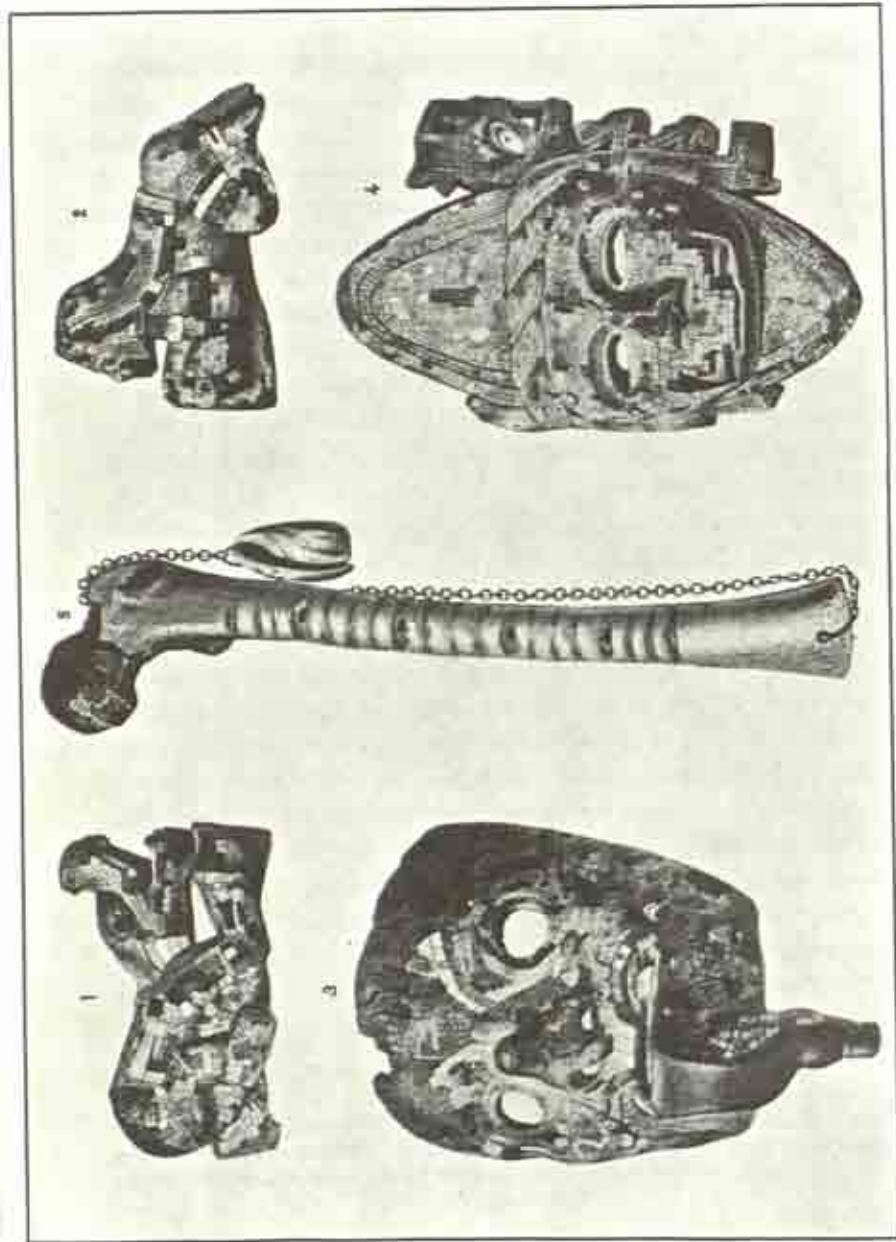
The three ancient mosaics deposited in Berlin include a skull mask and two animal figures. The most interesting of these is the first,³ which is fashioned from a human skull inlaid over the surface with small slabs of sky-blue to pale turquoise. This specimen was previously in the Ducal Museum of Braunschweig. The second piece⁴ is a two-headed jaguar, 12.5 inches long, carved

¹ Aldrovandus, *Museum Metallicum*, Bologna, 1647, p. 350.

² Legati, *Museo Carpiano*, Bologna, 1677, p. 477. Lieetus (*Pyranarcha rice de fulminum natura deque febrium origine libri duo*, Padua, 1634, pp. 123-126) figures and describes two knife-handles similar to those in Rome and the one in London. Lehmann (1906, loc. cit.) thinks that these two represent the ones described by Aldrovandus (1647, loc. cit.) and are now apparently lost.

³ Bastian, loc. cit.

⁴ Lehmann, 1907, loc. cit.



ANCIENT MEXICAN OBJECTS ADORNED WITH MOSAICS OF TURQUOISE AND OTHER STONES. PREHISTORIC AND ETHNOGRAPHICAL MUSEUM IN ROME. (AFTER PIGORINI)

from a piece of wood and covered with plates of turquoise and malachite, with some obsidian, shell, and mother-of-pearl. The eyes are malachite. It came to the museum through the estate of Alexander von Humboldt, who must have secured it during his journey in Mexico, though he left no note concerning its acquisition. The third example is a jaguar head of wood, inlaid with shell, turquoise, and malachite. This specimen was formerly in the Ducal Museum of Braunschweig.

There are three turquoise incrustated objects in Vienna. No. 1¹ is a circular, slightly convex, wooden shield, about 16.5 inches in diameter. Except for a narrow border it was formerly covered with an elaborate design in turquoise mosaic, which has almost entirely fallen away, leaving impressions in the gum indicating its original extent. The object probably formed the center of a shield, somewhat similar to those presented to Cortés by Montezuma. No. 2 represents the head of an animal, carved of light-colored wood and covered with an inlay of pieces of shell, jadeite, turquoise, and glass or obsidian. This is of somewhat different make from the other mosaics, and is executed in a much bolder and rougher style. The earliest mention of these two objects was in an inventory for the year 1596. In 1891 they were encountered by Mrs. Zelia Nuttall in the Ambras Collection, and were subsequently transferred to the Imperial Hofmuseum in Vienna. No. 3² is a Xolotl figure. Its history is not known.

The two specimens in Copenhagen are masks of wood, ornamented with mosaics of turquoise, mother-of-pearl, and small shells.³

The single specimen in Gotha is a well-made mask in the shape of a bird's head.⁴ It is decorated with an inlay consisting of malachite, turquoise, mother-of-pearl, red coral, and white shell, but most of the mosaic has fallen out. This object was obtained from a Jesuit collection in Rome about 1800.

The final example forms part of the Blackiston Collection in the United States National Museum, and has an added interest in being

¹ Heger, loc. cit. The turquoise was identified as such by F. Berwerth.

² Lehmann, loc. cit.

³ *Congrès International 1889*, loc. cit. Steinhart, loc. cit.

⁴ Andree, loc. cit.

the only specimen of ancient Mexican or Central American mosaic art now known on this continent. The object¹ is a life-sized mask which was formerly covered by a mosaic of turquois² and other stones set in a thick layer of gum or pitch. Three greatly elongated projections serve for the nose and two lips. There are two circular openings for the eyes, and smaller ones on the side to carry thongs which bound it to the head. In the forehead is an oval hollow which possibly formed a setting for a large ornamental stone, since fallen out. Along the sides of the face are impressions in the gum of regularly shaped stones, larger than those of the rest of the mosaic. The remainder of the mask was covered by thin, polished slabs of turquois, a number of which are still in place. The turquois is fine blue and green to dirty grayish or yellowish. The mask was recently collected by A. H. Blackiston from a cave in Honduras, near the ruins of the ancient city of Naco.

The twenty-four known mosaics, by way of summary, are as follows:

- | | |
|---------------------------|---|
| 10 masks | { Human skulls, 2 (London, Berlin). |
| | { Wood, 7 (2 London, 2 Rome, 2 Copenhagen, 1 Washington). |
| | { Bird mask, 1 (Gotha). |
| 5 beasts | { Beast heads, 3 (London, Berlin, Vienna). |
| | { Beast figures, 2 (London, Berlin). |
| 3 knife handles | (1 London, 2 Rome). |
| 2 shields | (London, Vienna). |
| 1 helmet | (London). |
| 1 double snake | (London). |
| 1 bone musical instrument | (Rome). |
| 1 Xolotl figure | (Vienna). |

Except one mask (Washington) recently collected in Honduras, the other mosaics have been in Europe for a long period. Nearly all of them were acquired by European museums from old continental collections. More than half were at one period in Italy³ (distributed in Florence, Venice, Turin, Bologna, and Rome), the principal owners being the Medici in Florence, Ferdinando Cospi,

¹ Blackiston, *loc. cit.* The specimen is no. 258271.

² Identification verified by the present writer.

³ Lehmann, 1906, *loc. cit.*

a relative of the Medici, and Ulysses Aldrovandus in Bologna. As has been noted, some of these (or analogous examples, now lost) were mentioned in old catalogues of the years 1553, 1596, 1643, 1647, and 1677. It is probable that the majority reached Europe during and immediately after the Spanish conquest of Mexico. Most of these are of Aztec origin, though some were probably fashioned by tribes living farther to the south.

According to Lehmann¹ the mosaic art seems to have centered within the country east of the Mexican highland where, he believes, it existed in a specially flourishing condition. The turquoise utilized was possibly derived from near-by deposits now unknown. There is some authority² for believing that this mineral was imported from Guatemala and Xochonuchco, and ancient tradition points to the village of Tulla as a source.³ It is almost certain, however, that part of it at least was obtained through trade from the Cerillos locality in New Mexico, which was extensively exploited in pre-Spanish time.

The mosaics were not ordinary ornaments. They had a symbolical meaning and were apparently confined to ceremonial application. They were the insignia of the Aztec gods, and, as such, were employed to adorn their representatives, both idols and priests. They had, moreover, a legendary significance, and tradition frequently attributed their use to the deities. The presents sent by Montezuma to Cortés included objects elaborately adorned in turquoise mosaic; these gifts carried a special meaning in that they were the regalia dedicated to the memory of Quetzalcoatl, of whom Cortés was believed to be the reincarnation.⁴

Dental mutilation.—A peculiar custom of aboriginal America, and one most frequently practised in Central America and Mexico, was that of altering the shape of the teeth or modifying their appearance by the insertion of different materials. Several of the

¹ *Globus*, vol. 90, 1906, p. 322.

² Sahagun, book II, edition of H. Simón, p. 763. Hernández, *Hist. Animalium et Mineralium Novæ Hispaniæ*, book I, tr. 6, p. 90, cited by Lehmann, 1906, p. 319.

³ See page 444.

⁴ Sahagun, loc. cit., book II, chap. 4. See also Nuttall, *The Atlatl or Spear-thrower*, *Peabody Museum Papers*, Cambridge, 1891, vol. I, no. 3, pp. 21-23.

early Spanish historians refer to this fashion, and in the Catalogue of the Bishop Collection of Jade¹ is a reproduction of three teeth incrustated with green jadeite. A mythological personage known as Vukub-Cakix is described as possessing teeth incrustated with blue stones that shone like the face of the sky,² and this appears to refer directly to the use of turquoise for adorning the teeth. That such was actually done is attested by an upper jaw-bone exhumed in 1882 from a sepulcher near Campeche in Yucatan, which bore six teeth inset with convex and polished turquoises of blue-green color.³

THE ANCIENT USE OF TURQUOIS IN THE SOUTHWEST⁴

Use as Attested by Historical Evidence

Vague rumors reached the Spaniards of enormous riches to the north of Mexico, and toward the middle of the sixteenth century we find them turning their attention to this unknown and alluring region. In 1535 Cabeza de Vaca, with three companions, made an extraordinary journey from eastern Texas to Sonora on the Pacific coast,⁵ which subsequently led to the discovery of New Mexico. Cabeza de Vaca was the first to note the use of turquoise among the sedentary tribes. When near the Pacific coast he was made presents of turquoise by the Indians. Among the Sierra Madre, about 90 miles east of the Yaqui river in Sonora, he found the Indians owning turquoises, and, inquiring whence they came, was informed that they were brought from the distant north where they were obtained in exchange for parrot plumes.⁶

In 1539 Fray Marcos de Niza, with a negro companion named Estevan, penetrated northward into the present New Mexico in

¹ *Investigations and Studies in Jade*, New York, 1906, vol. 2, p. 101.

² Bourbourg, *Popol-Vuh*, Paris, 1861, quoted by Boman, *Antiquités de la région Andine*, etc., Paris, 1902, vol. 1, p. 383.

³ Hamy in *Bull. Soc. d'Anth. de Paris*, vol. 5, 1882, p. 884, figured. This object is also described by the same writer in *Décades américaines. Mem. d'arch. et d'ethn. américaines*, déc. III, no. 28, p. 92.

⁴ This term is used to include the plateau region now comprising Arizona and New Mexico, and adjacent parts of Mexico, California, Nevada, and Colorado.

⁵ Bandelier, *Contributions to the History of the Southwestern Portion of the United States*, Cambridge, Mass., 1890.

⁶ *Ibid.*, pp. 42, 61.

search of the "Seven Cities of Cibola".¹ While his account of the adventuresome journey is exaggerated as to detail, it is in the main reliable. He found the natives of the region valuing turquois as ornaments and using it for exchange. He was impressed by the great number of turquoises worn by the Sobaipuris of the Rio San Pedro in southern Arizona, the last region inhabited by village Indians before Zuñi was reached.² The natives along his course gave Fray Marcos presents of turquois and ox-hides.³ Nearing Cibola he reached a village on the edge of the desert, where the inhabitants wore turquoises suspended from the ears and nostrils; these ornaments were called *cacona* and the wearing of them *casconados*.⁴ Many turquoises were offered the friar, who was told that these gems abounded in Cibola as well as in the kingdoms of Marata, Acus, and Tontontéac.⁵ Estevan, who had shown undue zeal in collecting turquoises,⁶ had been sent ahead to Cibola, where he became involved in difficulties with the Indians and was killed. Niza followed and found that the people of Cibola "have emeralds and other jewels, although they esteem none so much as turqueses wherewith they adorn the walls of the porches of their houses, and their apparel and vessels; and they use them instead of money through all the country."⁷ Niza took formal possession of Cibola and returned to Mexico, where he gave a glowing account of the riches of the new country. A force was then raised under Coronado and dispatched to conquer Cibola.

In 1540 Coronado visited the newly discovered country of Cibola, and reported that Niza had enlarged upon the richness of the place and denied that the houses were decorated with tur-

¹ A group of pueblos, now in ruins, centering about the present pueblo of Zuñi.

² Bandelier, *Contributions to the History of the Southwestern United States*, Cambridge, 1890, p. 442.

³ Extracts from Journal of Fray Marcos de Niza, published in the Indian Report by Lieut. Whipple, *Pacific R. R. Expl. and Surv.*, vol. 3, pt. 3, 1856, pp. 103-108.

⁴ Davis, *Spanish Conquest of New Mexico*, 1869, p. 125.

⁵ *Ibid.*, p. 125. Marata has been identified as the ruined Makyata near Zuñi; Acus as the pueblo of Acoma; and Tontontéac as the Tusayan or Hopi province, north-westward from Zuñi. See Winship, *The Coronado Expedition, 14th Ann. Rep. Bur. Amer. Ethnol.*, 1892-93, pt. 3, p. 357.

⁶ Winship, *loc. cit.*, p. 357.

⁷ Marcos de Niza in Whipple's *Report*, 1856, *loc. cit.*

quoises.¹ However, he noted that the natives possessed turquoises of good quality, as well as "turquoise earrings, combs and tablets set with turquoises";² and he further observed that they sometimes offer turquoises in their worship, which is principally of water.³ When Coronado had occupied Cibola he heard of Tusayan (the present Hopi pueblos) and dispatched Don Pedro de Tobar to capture its villages. After a brief fight, in which the natives were defeated, the latter sued for peace, offering gifts including turquoises.⁴ Somewhat later Alvarado was dispatched by Coronado on a short journey past Acoma to Cicuye (the present Pecos), where he was presented with cloth and turquoises, "of which," he reported, "there are quantities in that region."⁵

In a letter⁶ from Mendoza to the King of Spain, written in 1540, it is observed that the people of Cibola have turquoises in quantity, though not so many as Marcos de Niza at first affirmed. Castañeda,⁷ who accompanied Coronado to Cibola, referred to the custom in Culiacan (Sinaloa) of making presents of turquoises to the devil and of decorating certain classes of women with bracelets of fine turquoises. According to Bandelier⁸ the Seri of Sonora, in early Spanish time, exchanged iridescent shells from the Gulf of California for the turquoise of Zuñi; and the Opata gave parrot skins and plumes to the people of Zuñi in return for turquoise and turquoise ornaments. The Apache between the years 1630 and 1680 were accustomed to come to the pueblo of Pecos to trade in

¹ Coronado, Extracts from journal, published by Lieut. Whipple in *Pacific R. R. Expl. and Surv.*, vol. 3, pt. 3, 1856, pp. 108-111. According to F. H. Cushing the custom of adorning the porches of the houses with turquoises is supported by tradition.

² *Ibid.*

³ Winship in *14th Ann. Rep. Bur. Amer. Ethnol.*, 1892-93, p. 573. In Smith's *Relación de la Jornada de Coronado á Cibola* (Colección de Documentos para la Historia de Florida, London, 1857, vol. 1, p. 148) it is stated that the people of Cibola offered turquoises of poor quality in sacrifice to their springs. This custom of devoting offerings to the sources of water was widespread among the Pueblo Indians. See Hough, *Sacred Springs of the Southwest, Rec. of the Past*, vol. 5, 1905, pp. 163-169.

⁴ Castañeda's narrative in Winship, loc. cit., p. 489.

⁵ *Ibid.*, p. 491.

⁶ Translated in Winship, loc. cit.; see p. 549.

⁷ Narrative, in Winship, loc. cit.; see p. 513.

⁸ Bandelier, *Final Report of Investigations among the Indians of the Southwestern United States*, Cambridge, 1891, pt. 1, p. 30; also p. 63.

turquois.¹ The Yaqui in former times held the turquois in place of money.² The Tano during the 16th century owned the Cerillos turquois deposits in New Mexico and guarded them jealously,³ and the turquois obtained therefrom proved quite an important resource for purposes of commerce.

There is little evidence that turquois was used in Spanish times by tribes living to the north and east of the Pueblo region. It is stated in one place,⁴ however, that in the region of the lower Mississippi the Spaniards saw shawls of cotton, brought, it was said, from the west, and probably from the Pueblo country, as they were accompanied by objects which from their description may have been of turquois. More than one hundred minute discoidal beads and a small pendant of turquois, believed to have been derived through trade with the Pueblos, were found with the skeleton of a child in a mound in Coahoma county, Mississippi.⁵

Use as Attested by Objects

Throughout the Southwest turquois ornaments of various kinds have been found in comparative abundance in graves and ruins. Bandelier⁶ noted turquoises which came from the ruins of Casas Grandes, in Chihuahua, Mexico. Kunz⁷ describes and figures two objects found by F. H. Cushing near Tempe, Maricopa county, Arizona. The first of these is a prairie-dog carved from white marble, with turquois eyes; the second, a sea-shell incrustated with mosaic of turquoises and garnets (?), fashioned to represent a frog.⁸

¹ Vetancurt, *Teatro Mexicano*, Mexico, repr. 1870-71, vol. 3, p. 323.

² Bancroft, *Native Races of the Pacific States of North America*, New York, 1874, vol. 1, p. 583.

³ Bandelier, *Final Report*, etc., loc. cit., 1890, pt. 1, p. 163.

⁴ Holmes, *Prehistoric Textile Art of Eastern United States*, 13th Ann. Rep. Bur. Amer. Ethnol., 1891-92, p. 25.

⁵ Peabody, *Exploration of Mounds, Coahoma County, Mississippi*, *Peabody Museum Papers*, Cambridge, 1904, vol. III, no. 2, pp. 50-51.

⁶ *Final Report of Investigations among the Indians of the Southwestern United States*, Cambridge, 1890, pt. 1, pp. 39, 352.

⁷ *Gems and Precious Stones*, New York, 1890, p. 61.

⁸ The incrustated frog referred to by Kunz was not found, but was a model of one in possession of Mr Lincoln Fowler, of Phoenix, Arizona, the source of which was one of the ruins in the Salt River valley.—Editor.

Blake has referred to a mosaic of turquoise dug from the ruins near Casa Grande on the Gila river,¹ and an ancient cross of clam-shell bordered with turquoise mosaic from a cliff-dwelling on Oak creek,² near Jerome, Arizona. In the latter locality Fewkes³ found some beads in the Honanki cliff ruin, near Oak creek. According to Blake,⁴ also, the ruins of the Salt River valley in Arizona have yielded many turquoise beads and pendants, formerly used for necklaces, and a marine shell incrustated with turquoise.

In 1896 some interesting finds of turquoise objects were made by Fewkes⁵ in the ancient pueblo ruins near Winslow, Arizona. The most important of these is a beautiful ornament of shell incrustated with turquoise,⁶ found at Chaves Pass, on the breast of a skeleton. It consists of one valve of *Pectunculus giganteus*, coated with gum, in which are inlaid rows of green turquoise slabs carefully fitted together, the object representing a frog or a toad. The near-by ruins along Cheylon creek, a tributary to the Little Colorado, likewise furnished turquoise ornaments, including a square fragment of lignite, inlaid with five small turquoises; a pear-shaped pendant of bone covered on one surface with turquoise mosaic; an armlet of shell inlaid with turquoise; and an object of shell and turquoise combined in an incrustation on wood. Of the dress of the ancient Patki people who formerly inhabited these ruins, Fewkes⁷ says:

"For ornaments they wore shell, bone and turquoise variously worked. The most elaborate forms of these ornaments were shell and turquoise incrustations on wood, shell, lignite or bone. . . . The women had ear-pendants made of rectangular fragments of lignite set with turquoise, bone incrustated with the same, or simple turquoise. Both sexes had armlets, wristlets and finger rings made of the marine shell *Pectunculus giganteus*, sometimes inlaid with stone."

From the Black Falls ruins, on the Little Colorado, about 35

¹ *Amer. Jour. Sci.*, vol. 25, 1883, pp. 197-200.

² *Amer. Antiquarian*, vol. 22, 1900, pp. 108-110.

³ 17th Ann. Rep. Bur. Amer. Ethnol., 1895-96, p. 573.

⁴ *Amer. Antiquarian*, vol. 21, 1899, pp. 278-284.

⁵ Ann. Rep. Smithsonian Inst., 1896, pp. 517-539.

⁶ Figured in colors in the publication cited, p. 529. Also described in *American Anthropologist*, vol. 9, 1896, pp. 359-367.

⁷ Loc. cit., p. 534.

miles northeast of Flagstaff, Fewkes obtained an interesting pair of ear-pendants, made of lignite slabs, upon which are cemented small squares of turquoise and lignite, arranged in simple though attractive geometrical design, with a slab of yellow indurated clay in the center.

Farther north, in the Sikyatki ruin in the Tusayan province, many turquoise objects have been unearthed¹ during the course of archeological excavations. The ancient Sikyatki people buried their dead with the ornaments worn while living, and their skeletons were frequently found with rows of turquoise beads about their necks and single pendants near the mastoid process, indicating that the bodies had been decorated with necklaces and pendants. A food vessel collected from the Sikyatki ruin is decorated with the painted head of a woman wearing square ear-pendants of turquoise mosaic, similar to those worn by the Hopi women of today. A pair of similar earrings consisting of flat slabs of wood, with one side covered with tiny squares of turquoise set in hardened pitch, has been found by Cummings² in the Betatakin ruin, a well-known cliff-dwelling near Marsh Pass in northwestern Arizona.

Turquoise beads and ear-pendants are frequent in the ruins of northwestern New Mexico and the adjacent region.³ In 1899, George H. Pepper found many turquoise carvings and some imperfect mosaics in ruins in the Mancos cañon,⁴ in the southeastern corner of Colorado. Of special interest were tadpoles from $\frac{1}{4}$ to 1 inch in length, fashioned of turquoise and perforated for suspension as pendants; and frogs nearly 3 inches long made of black jet, with raised eyes of turquoise and a band of the same material back of the eyes. The turquoise was mostly of a rich green, though some pieces were partly bluish. Dr J. Walter Fewkes⁵ has seen a beautiful bird mosaic, inlaid with turquoise, from one of the ruins near Cortez in the Montezuma valley, not far from Mancos. This object is made of hematite, with turquoise eyes and neckband. The

¹ Fewkes in *17th Ann. Rep. Bur. Amer. Ethnol.*, 1895-6, pp. 641, 662, 733.

² *Bull. Univ. Utah*, 1911, vol. 3, no. 3, pt. 2, p. 35.

³ Bandelier, *Final Report*, loc. cit., p. 352.

⁴ Kunz in *21st Ann. Rep. U. S. Geol. Surv.*, 1899-1900, p. 456.

⁵ *Bur. Amer. Ethnol., Bull.*, 41, 1909, p. 27.

feathers are represented by stripes of inlaid turquoise, and upon the back is an hour-glass figure, also in turquoise inlay, recalling designs in ancient pottery. A single specimen of turquoise, probably an eardrop, was found in the Cliff Palace ruin in the same region.

The most important series of turquoise objects yet found in this country, however, was the result of explorations made in 1896 by George H. Pepper¹ in the ancient Pueblo Bonito of Chaco cañon, northwestern New Mexico. Mosaics, carvings, beads, and pendants in great quantity and variety were found in the burial rooms and accompanying the skeletons of the former inhabitants. A few may be described. One of the objects is a "bone scraper" formed of the humerus of a deer or an elk and decorated about its center with an inlay of jet and turquoise, showing considerable taste and skill in execution and design. Another is a head or breast ornament, made of polished jet, its four corners set with circular turquoises. Another jet object is designed to represent a frog or a toad; its body is carefully rounded and polished; the eyes are two large rounded pieces of turquoise standing boldly out, and across the neck is a broad inlaid band of the same material.² A suite of eight duck-like birds, carved from decomposed turquoise, of pale bluish-green color, were prominent among the finds. The figures were probably roughed-out with a stone implement and then ground to the desired shape with sandstone grinders. In addition, the ruins yielded a quantity of turquoise pendants and discoidal beads, mostly green in color; one pendant, however, showed a delicate blue.

One burial room in particular has served as the subject of a special paper by Mr Pepper,³ and the number and variety of turquoise ornaments found therein is remarkable. About the neck, breast, waist, wrist, and ankles of several of the skeletons, turquoise beads to the number of several thousand were encountered, together with pendants and carved pieces. Near one of the bodies

¹ *American Anthropologist*, vol. 7, 1905, pp. 183-187.

² Among the Pueblo Indians of today, as well as among the ancient inhabitants of the Southwest, the frog is a symbol of water, and its conventionalized design is common in both the ancient and the modern art.

³ *The Exploration of a Burial-room in Pueblo Bonito, New Mexico*, Putnam Ann. Vol., New York, 1909, pp. 196-252.

was a "turquoise jewel-basket" of cylindrical shape, 3 inches in diameter and 6 inches long, consisting of slender splints, over which a mosaic of turquoise slabs had been cemented by means of piñon gum. The basketwork had decayed, but the mosaic was held in place by the sand in which the object was buried. One thousand two hundred and fourteen pieces of turquoise had formed the mosaic, and within and near the mouth of the cylinder were found 2150 disk-shaped turquoise beads and 152 small and 22 large turquoise pendants, some carved to represent birds. Among thousands of other objects of turquoise there may be noted the following: A stone ornament with inlay of turquoise; another object made of turquoise and shell mosaic inserted on basketwork, the beads being strung and placed on edge in parallel rows; a pendant with turquoise front and trachyte back, showing splendid workmanship; several beads with holes smaller than an ordinary pin; a number of tadpoles, frogs, and buttons of carved turquoise, drilled on the underside for suspension; a pear-shaped ornament made of three turquoise pieces joined with great exactness; a cylinder of hematite ornamented with turquoise inlay, representing a bird; a mouthpiece for a shell trumpet incrustated with turquoise; pendants of various shapes and sizes; beads, ornaments, and inlays in great variety.

Pepper¹ states that this burial chamber probably contained the remains of priests, caciques, or other important personages, and that the objects show a high degree of skill and taste, and "afford conclusive evidence that the people of Pueblo Bonito reached as high a degree of proficiency in the arts as those of any other pueblo in the Southwest."

RECENT AND PRESENT USE OF TURQUOIS IN THE SOUTHWEST

The turquoise is today in wide use among the Indians of the Southwest, and it forms one of their most cherished possessions. As in the past, it still finds a ceremonial as well as an ornamental application.

Pueblo-dwelling tribes.—The Pueblo Indians find great pleasure in turquoise and seldom is a well-to-do representative seen without

¹ *Ibid.*, pp. 251-252.

ornaments of this material. Especially upon gala occasions and during ceremonies is this stone in evidence, and both sexes bedizen themselves with quantities of it. The turquoise is most commonly fashioned into discoidal and cylindrical beads and into various sized pendants of oblong, triangular, and keystone outline. The work is performed by rubbing the material on sandstone and polishing on finer material, and the objects are perforated with a bow-drill, usually tipped with a fragment of quartz or of flint. The workmanship is rather crude, and the finished piece is seldom symmetrical or highly polished. The beads are strung usually on a cord, but sometimes on wire, and one or more strands are used for necklaces, bracelets, and more rarely as ear-ornaments. Discoidal beads are the most common (see pl. XXXII, 3); at times these alternate with cylindrical shapes, and pendants may be inserted, especially toward the center, to give variety. Beads of coral and white shell are often combined with the turquoise, although their introduction lessens the value of the string. Pendants are frequently worn alone, suspended from the ears; indeed, this is perhaps the most common ornament seen in the Southwest. A number of pendants of Sia workmanship shown in pl. XXXII, 6, illustrate the customary shape and appearance of these objects. Finger-rings are sometimes set with turquoise, and the mineral is frequently used for purpose of currency. Furthermore, the turquoise is employed, though not so universally, for inlaying ornaments and objects of utility, and in some instances small slabs of this material are fashioned into mosaics of beauty, though not equal to the superb examples made of old by the Aztecs.

In addition the turquoise finds application by virtue of its supposed efficacy, and consequently it is prominent in many charms, amulets, and fetiches. Few religious rites take place without its use, and the paraphernalia of the priesthood abounds in objects adorned with it. Indeed turquoise may be said to hold a fundamental place in the religious ideas of the Pueblo Indians and in their outward ceremonial expression of them.

The turquoise utilized varies from very inferior material to really beautiful stones. The majority, however, are of little value as



INDIAN TURQUOIS ORNAMENTS

1. Zuni ear pendants in turquoise mosaic. 2. Hopi ear pendants in turquoise mosaic. 3. Pueblo necklace—turquoise, coral, and shell beads. 4. Zuni ornament—shell inlaid with turquoise. 5. Navaho ring of silver set with curved turquoise. 6. Pendants of turquoise, Six workmanship. All of these objects are in the United States National Museum.

gem material, according to our standards. Turquoise matrix is used along with pure material, although the latter is preferred. The Indian is usually a rather keen judge of quality, although he does not so strongly favor the blue color, to the exclusion of the green, as does the white man.

The Zuñi value the turquoise more highly than does any other Pueblo tribe, with the possible exception of the Hopi. A single string of beads of good quality is said to be worth several horses. In former times the Zuñi necklaces were more carefully made than they are today, and numbers of them, worn only on ceremonial occasions, have been handed down from father to elder son for several generations.¹ Two red shells inlaid with turquoise and worn pendent to the necklaces during certain religious rites were in possession of the Zuñi from early time; recently Mrs M. C. Stevenson succeeded in obtaining one of them for the United States National Museum. (See pl. XXXII, 4.) According to Mrs Stevenson, double loops of turquoise beads are worn by the Zuñi in the ears only on ceremonial occasions; at other times they are worn pendent to necklaces. Beautiful mosaics consisting of thin pieces of turquoise cemented to wooden slabs are sometimes suspended from the ears. A good example, with a piece of abalone shell in the center, is shown in pl. XXXII, 1. In the United States National Museum is a Zuñi cradle with a small turquoise inset in a position that would come beneath the heart of the occupant. Many Zuñi fetiches, particularly such as were supposed to be efficacious in the chase, have pieces of turquoise attached to them.² Some are fashioned of stone in crude animal shapes, with inlaid eyes of turquoise. An example of particular interest in the United States National Museum is made of sandstone, dipped in blood, and not only are its eyes of turquoise, but several irregular slabs of this material are inset at intervals over the body.

The most characteristic adornments of the Hopi are the mosaic ear-pendants worn by the women. These are very beautiful, and are made of thin slabs of turquoise, nicely polished and cemented

¹ Stevenson, M. C., *Dress and Adornment of the Pueblo Indians*. Consulted in manuscript.

² Examples are displayed in the United States National Museum.

with piñon gum to a flat wooden base. An example is shown in pl. XXXII, 2. According to Fewkes,¹ the older mosaics of this description are much finer than the modern ones, some of which are made of reworked turquois, containing pieces previously perforated and used for beads. They have generally dropped out of use on the East Mesa of the Hopi domain, where they are preserved as heir-looms.² Necklaces, ear-pendants, bracelets, etc., are used in abundance by the Hopi. The men wear loop earrings similar to those worn by the Zuñi on ceremonial occasions. According to Mrs Stevenson³ the Hopi in 1882 possessed several shell mosaics similar to one illustrated in pl. XXXII, 4. The Hopi have perhaps the most elaborate ceremonies of any Indian tribe, and the turquois figures in many of them. During the famous Snake Dance, each Antelope Priest is customarily adorned with shell and turquois necklaces.⁴ The Walpi Warrior Society, in certain of its rituals, uses a jet snake with turquois eyes and other emblems adorned with turquois.⁵ In several of the Hopi Katchinas, as described by Fewkes,⁶ the figures are represented with ornaments of turquois, and many Hopi fetiches are frequently decorated with this material.

The Keres of Santo Domingo pueblo, New Mexico, wear beads of turquois strung on silver wire, and earrings of the same material.⁷ Their medicine-men, in their ceremonies to induce rain, use a fetich of gypsum in the form of a prairie-dog, with eyes of turquois.⁸ Kunz⁹ mentions a large, flat, drilled turquois amulet that was employed as a charm by these Indians. Roughly ground, heart-shaped ornaments, drilled with a bow-drill with point of quartz or agate, have been sold to some extent by them.¹⁰

¹ 22d Ann. Rep. Bur. Amer. Ethnol., 1900-01, p. 86.

² Fewkes in *American Anthropologist*, vol. 9, 1896, pp. 359-367.

³ *Dress and Adornment of the Pueblo Indians*, op. cit.

⁴ Fewkes in 16th Ann. Rep. Bur. Amer. Ethnol., 1894-95, p. 282.

⁵ Personal communication from Dr Fewkes.

⁶ 21st Ann. Rep. Bur. Amer. Ethnol., 1899-1900, pp. 67, 86, 113, 119.

⁷ Kunz in *Mem. Intern. Congr. Anthr.*, Chicago, 1894, pp. 267-281.

⁸ In the United States National Museum there is a somewhat similar fetich from Sia, New Mexico, with body of gypsum and eyes of turquois, made probably to represent a bear.

⁹ Kunz in *Mem. Intern. Congr. Anthr.*, op. cit.

¹⁰ Kunz, *Min. Resources of the United States for 1883-84*, U. S. Geol. Survey, pp. 767-768.

Pima.—Among these Indians turquoise is now rarely seen, though in the earlier days ornaments of this material were common.¹ Both sexes, but especially the men, wore strands of beads and pendants, usually of turquoise and shell, suspended from the ear-lobes and the neck, while upon the arms of women and the right arms of men were often seen bracelets of similar material. A very brave man was accustomed to pierce the septum of his nose and wear suspended from it a bit of polished bone or else a piece of turquoise or shell.

Navaho.—The wandering Navaho hold the turquoise in no less esteem than do the neighboring pueblo-dwelling tribes, from whom they doubtless derived their fondness for this gem. Indeed they value their turquoise ornaments above all other possessions, and their regard for this precious stone causes them to go to almost any extreme to obtain it. They are inordinately fond of personal adornment, and not uncommonly a single Indian will bedeck himself on special occasions with regalia to the value of several hundred dollars. In general, a man's position and wealth may be judged from the number of ornaments he wears.

A Navaho is seldom seen without ear-pendants and necklaces of turquoise. The former are usually large pieces, roughly fashioned into keystone shape and polished, which are attached to the ears with cord; the necklaces consist of small, perforated, discoidal beads, from one-eighth inch in diameter upward, strung frequently for sake of variety with a few cylindrical beads and pendants or combined with beads of red coral and white shell. Occasionally a saddle-horn or a gun-handle will be studded with small knobs of turquoise. The Navaho also are clever silversmiths, and the turquoise is their favorite stone for setting in various objects of jewelry. Bracelets, buttons, buckles, belts, rings (see pl. XXXII, 5), plaques, and other ornaments are fashioned from Mexican pesos and

¹ Russell in 26th Ann. Rep. Bur. Amer. Ethnol., 1904-05, p. 112. An old military report of 1848 (Emory, *Notes of a Military Reconnaissance from Fort Leavenworth, in Missouri, to San Diego, in California*, Senate Ex. doc. 7, 30th Congress, 1st sess., 1848, p. 88) mentions that at that time the Pima and Maricopa Indians were accustomed to resort to near-by ruins after rains to search for trinkets of shell and a "peculiar green stone" (the turquoise).

American silver pieces, and frequently inlaid with roughly polished pieces of turquoise. According to Mrs Stevenson,¹ the first setting of turquoise in silver was done in 1880, after which the Navaho became much interested in this type of work. The Zuni soon followed their example, and both tribes have produced interesting specimens, although the Navaho excel the Zuni in originality of design.²

The turquoise passes as currency with the Navaho. He will pay a high price for a desirable stone, and although he has no definite idea of its exact value, he cannot be imposed on with a poor, inferior stone. A Navaho herder was seen on one occasion to buy \$125 worth of turquoises at a trading-store after disposing of about \$300 worth of wool to the trader.³ Much of the turquoise in use is of various shades of green, but occasionally a fine blue stone is seen, and this is particularly valued by the Indian. In rare instances a small turquoise of good color is obtained from one of the cliff-ruins in which the region abounds, and upon such a specimen the Navaho places a particularly high value, refusing to sell it under any circumstances, for he realizes that its color has been tested by centuries and will not fade.

In addition to its ornamental use, the turquoise figures in many Navaho rituals and possesses a religious significance. It is used in the Mountain Chant⁴ and the Night Chant,⁵ two of the most important Navaho ceremonies. Certain sacred objects of ceremonial application are customarily painted blue with powdered turquoise.⁶ The mineral is commonly called *chalchihuitl* and pronounced *chal'-chi-we-te* by the Navaho.⁷

Other tribes.—The Apache values the turquoise and calls it

¹ *Dress and Adornment of the Pueblo Indians*, op. cit.

² *Ibid.*

³ Sterrett, *Min. Resources for 1911*, U. S. Geological Survey.

⁴ Matthews in *5th Ann. Rep. Bur. Ethnol.*, 1883-84.

⁵ Matthews in *Mem. Amer. Mus. Nat. Hist.*, Hyde Expedition, 1902.

⁶ Matthews, *The Mountain Chant*, in *5th Ann. Rep. Bur. Ethnol.*, 1883-84, p. 421.

⁷ Blake in *Amer. Jour. Sci.*, vol. 25, 1858, p. 227. Also according to personal communications of Mr F. W. Hodge and Dr Walter Hough, who inform me that this Mexican term is commonly employed to designate the stone by the Southwestern Indians. It was the writer's experience that the turquoise was also termed "*dohlii*" by the Navaho. The Zuni name is '*hi'akwa*'.

duklij ("blue, or green, stone," these two colors not being differentiated in their language). The Apache medicine-man is almost invariably provided with some of this mineral, which is supposed to have unusual virtues. It has long been in use in this manner, for according to Bourke,¹ "it was the Apache medicine-man's badge of office, his medical diploma, so to speak, and without it he could not in olden times exercise his medical functions."

The Ute are stated to prize the turquoise as highly as do the Navaho.² Their congeners, the Paiute, use the turquoise in much the same manner as do the Navaho, but care less for it.

DISCUSSION OF THE USE OF TURQUOIS

The portion of North America wherein the turquoise has found application among the aborigines is sharply limited on the one hand by the Isthmus of Panama, and on the other by a line drawn eastwardly from the Pacific coast through southern Nevada and Colorado, thence southward through Texas to the Gulf of Mexico. This is, of course, due to the fact that the American deposits of turquoise, except two of little importance,³ are confined to this area. Rarely, however, has the dependence of use upon occurrence been so well exemplified. It indicates, too, the lack of communication between the pueblo-dwelling tribes of the Southwest and the other Indians of the United States.

The aboriginal use of turquoise can be further analyzed as due to three principal reasons. Firstly, the mineral occurs upon and near the surface, so that deposits thereof are easily located and readily worked with crude appliances. Secondly, turquoise is comparatively soft and lends itself to primitive methods of shaping, that would make no impress upon the harder stones. And thirdly, the color of the turquoise, ranging from the blue of the sky to the green of water and plants, seems to make a strong psychological

¹ The Medicine-men of the Apache, *9th Ann. Rep. Bur. Amer. Ethnol.*, 1887-88, pp. 588-591. It should be mentioned that Bourke calls the *duklij* malachite, but his description and allusions leave no doubt that turquoise was meant.

² Pepper, 1909, loc. cit.

³ In Alabama and Virginia.

appeal to uncivilized peoples, peculiarly fitting their religious ideas and constantly suggesting a symbolical application.¹

The individual sources of both the ancient and the modern turquoise are numerous. Most of them are now known to the whites, although it is believed that certain tribes still obtain stones from localities known only to themselves. The present-day Indians, however, carry on little systematic mining for turquoise, obtaining their material through barter with other Indians or by purchase from white traders. They utilize also quantities of turquoises handed down from their fathers. It is a striking circumstance that in America there are no turquoise deposits of importance that do not exhibit signs of prehistoric exploitation. At Los Cerillos, New Mexico, in particular, are immense excavations dating from pre-Spanish times. The source of the turquoise used by the ancient Indians of the Southwest is therefore apparent. To trace the source of the turquoise used in Mexico and Central America is more difficult. No occurrence at all adequate as an important source has been discovered south of the present Mexican boundary. It therefore seems probable that the Aztecs, at least, through trade with tribes to the north, obtained supplies of turquoise which came from the Cerrillos hills and perhaps other localities of the Southwest.

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¹ In the development of the color-sense, blue is the last of the pure spectrum colors to be distinguished. (See Goldschmidt, *Ueber Harmonie und Complication*, Berlin, 1901, pp. 97-101.) The fondness for blue, once formed in primitive people, seems to be a strong one.

THE KITSELAS OF BRITISH COLUMBIA

By GEORGE T. EMMONS

WHERE the Skeena river breaks through the eastern barrier of the Coast Range in British Columbia, 75 miles from its mouth, the pent-up waters have cut a deep cañon upward of a mile and a half in length, impassable during the spring and summer freshets and fraught with danger at all seasons. It is the most justly dreaded inland waterway of the Northwest, for, aside from the tremendous force of the contracted river over an uneven rocky bottom, forming great swirls and riffles, the upper entrance is obstructed by two high, narrow, rock ridges that divide the waters, forming two narrow channels at all stages and a third at extreme high water. The walls on either hand are precipitous or strewn with immense boulders to a height of from 50 to 100 feet, where narrow benches slope back from them to the mountains 3000 to 4000 feet in altitude.

This mountain gateway marks approximately the climatic line of demarcation between the flora and the fauna of the littoral and of the interior. The warm, moisture-laden, ocean atmosphere that drives in through Dixon Entrance is carried up the river valley by the prevailing westerly winds, and in the drying-out process of condensation in contact with the lofty, snow-covered mountains, is precipitated in continual mist and rain that induce an almost tropical growth of underbrush and account for the forests of great spruce, cedar, hemlock, and cottonwood that cover the bottomlands and climb the mountain sides to the limit of tree life.

Passing up the river, above the cañon, the effect of the drier, colder climate is manifest in the shrinkage of the conifers and the open woods of birch, alder, willow, and poplar, and the scantier vegetation and new species.

In like manner certain animals range through one or the other district only—as the little-known white bear (*Ursus kermodi*) of

the Tsimshian peninsula and adjacent islands, the great brown bear and the black-tail deer of the coast region, that later give place to the grizzly bear, the caribou, and the mountain sheep, while lynx, rabbit, and fox increase in number. At best, however, the valley of the Skeena is very poor in animal life, and the inhabitants have always looked to the river with its wealth of salmon for their chief support. The natives named this part of the river cañon *Dsilasshoo*, and those who lived here as *Gitdsilasshoo*, "people of the cañon," but this is now written officially *Kitselas*. They were of Tsimshian stock, but were intermediary between the Tsimshian proper who had their summer fishing villages on the river and lived at Metlakatla during the winter season, and the Kitikshan of the upper river who claim to be the parent stock from which both the Tsimshian and the Nishka have descended.

The Kitselas lived here permanently and held the cañon, claiming the river valley from Lorn creek above to the little cañon below. They were not permitted to descend the river for trading purposes below the first fishing village of the Tsimshian, and in like manner they restricted the Kitikshan to their country above the cañon. This position of middlemen was their life, for while their food supply of salmon was sufficient, their narrow strip of river country was poor in every other product.

There were four villages here, two on either side, at or near the head and foot of the cañon; and judging from what remains to mark their sites they must have been of fair size. Mr Hickey, of the Hudson's Bay Company, who passed through here in 1870, estimated the population at about one thousand. They were then living in primitive simplicity, in communal houses of medium size, of hewn timbers, with a central fire space and with smoke-hole in the roof. Carved heraldic columns marked the dwellings of the clans. The people dressed in skins and furs, and such blankets as they received in trade from the coast people. When they procured trousers they cut them off above the knees, using only the lower parts as leggings.

At the foot of the cañon, on the northern bank, just above where the river spreads out, forming an extensive high with a shelving

beach, was the village of Tsune-ee-yow, "landing place," so named from its accessibility, where canoes bound upstream could land at any stage of the water. The extent of the clearing encumbered with fallen and decaying timbers would indicate a settlement of considerable size.

Almost a mile above this, on the same shore, well within the cañon and just below where the separate channels unite, marked by the usual growth of berry bushes that take possession of old dwelling sites, are several rude poles and a deserted house that alone remain of the village of Kit-lah-soak, named from the bottom boards of the canoe that were taken—really, "people of the place when they steal the canoe bottom-boards." This would seem to have been the smallest of all the cañon villages—a reasonable conclusion from its inaccessibility by water at certain stages of the river.

On the southern shore, a short distance below the mouth of the cañon, where the river regains its usual width, was Kit-ousht, "people of the sand bar," where in former days the wash of the upper river formed an offshore shoal. From the level ground, the low shore, and the good water this was the most favored site, and it is claimed that it was a considerable settlement, but nothing remains to indicate its former greatness save the numerous axes, hammers, and parts of other stone implements dug up in the process of gardening and building. The only native remaining at the cañon lives at this place. The white village of Kitsela is situated here.

At the head of the cañon, on the southern shore, on a narrow bench extending along the dry channel, was Kit-lth-sahok, "people at the edge of the lake," or "people of the shore," for it is claimed that when the river was at a much higher level, before the present channels were formed, the waters at this point spread out as a great lake. Here the most extensive and interesting remains are found. The houses have generally fallen to decay, but the structural posts and beams in one old house 36 feet square show much ingenuity and careful workmanship in mortise, tenons, and dowel pins, without the use of metal. One feature of roof construction

different from anything I have seen, either among the Tsimshian of the coast or the Kitikshan of the upper country, is a heavy tree-trunk ridge-pole supported in the hollowed-out heads of two upright posts that gave the pitch to the roof by taking the upper ends of the rafters, the lower ends resting on the longitudinal framework of the walls. The forward end of this ridge-pole, which projected several feet beyond the house-front, was carved to represent the head of a salmon. The houses showed no signs of excavation, and like those of the Kitikshan were floored at the level of the ground. There remained standing in 1910 three old, slender totem-poles, or heraldic columns, which were rounded from base to summit and showed no evidence from chambers in the back that they were used as mortuary columns for the reception of the ashes of the cremated dead. These carvings are crude in comparison with either those of the coast or of the upper river, and would indicate either the poverty or the want of artistic sense of this people.

In the accompanying plate XXXIII, the totem-pole shown in *a* is carved to represent a beaver sitting up at the base, above which the rounded pole is ornamented in encircling series of parallel grooves indicating the marks of the beaver's incisors.¹

The pole shown in *b* is more elaborate; it shows at the base a frog, and above a mythical four-fin killer-whale, the tail carved to represent a human figure. Adjoining are the remains of the old communal house, with ridge-pole carved in the form of a salmon.

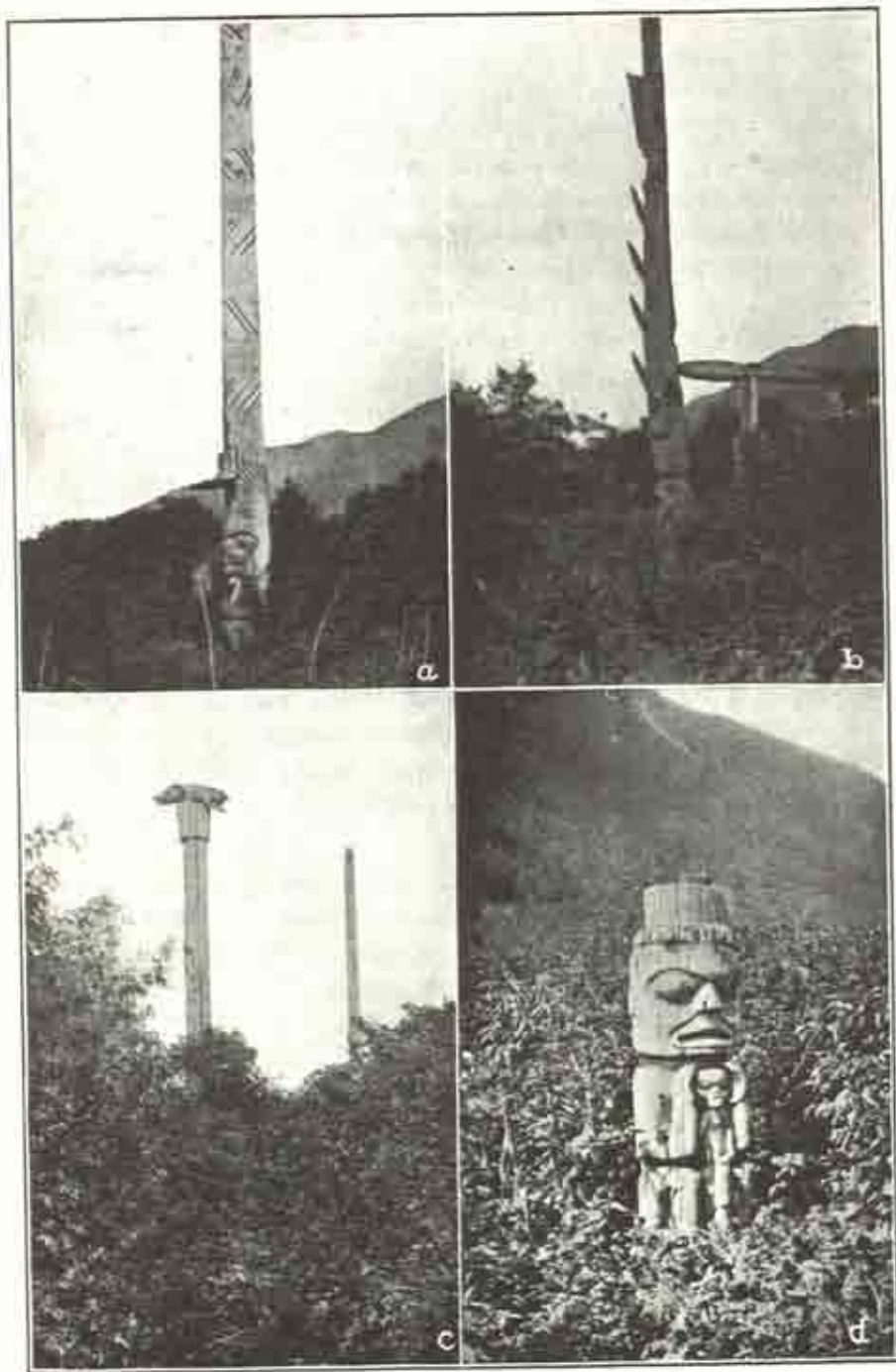
Figure *c* of the plate is a plain, rounded column surmounted by a wolf figure.

Only the base of the pole shown in *d* now remains; it is a human figure seated and inclosing a smaller figure.

The decayed remains of other carvings and house-timbers half-buried in the moss and overgrown with brush confirm the statement of the natives that this was the largest and most important of the villages hereabouts.

It must not be inferred from this scene of destruction and the

¹ The small projecting shelf above the figure contains a trespass notice requesting that the post be not disturbed, as it is private property.



HERALDIC COLUMNS, OR TOTEM POLES, OF THE KITSELAS

disappearance of the inhabitants that the Kitselas have ceased to exist. They have greatly decreased in numbers since their contact with the whites, and constitute but a remnant of their former strength. After the American gold discovery, when thousands of prospectors traversed the river, and the later navigation by steamboats and the planting of trading-posts at Hazelton, their position as middlemen was destroyed, as they could not compete with the white man, and, losing the trade of the Kitikshan, who naturally resorted to Hazelton, they had nothing left but the salmon in the water, as their narrow strip of river valley was almost destitute of animal life. Prior to this the Tsimshian of Metlakatla, who held the lower river and barred their passage to the sea, had removed to Fort Simpson, and with accumulated wealth and decreased numbers they became indifferent to the river travel, so that when the salmon canneries were established on the coast and the demand for fishermen increased, many of the Kitselas removed to Port Essington, where they are found today but so intermixed with others that their number can not well be determined. Those who remained longer in their old homes have moved down the river 4 miles, and have built a straggling village of eight small modern houses which they call An-dee-dom (from the noise made by stepping on a pebble shore), but which is commonly known as Newtown. Its population is about 60.

With the building of the Grand Trunk Pacific railway along the river the last vestiges of the older native life will rapidly disappear and the few people who survive the changed conditions will have little or no knowledge of the past. For this reason I offer these notes of two visits to Kitselas in 1909 and 1910.

PRINCETON, NEW JERSEY.

TEWA RELATIONSHIP TERMS

BY JOHN P. HARRINGTON

THE Tewa-speaking Pueblo Indians occupy at present five villages northwest of Santa Fé, New Mexico, and one village in northeastern Arizona. Each village has its peculiar dialect, but the dialectic differences are very slight. The notes embodied in this paper were obtained at the villages of San Ildefonso, Santa Clara, San Juan, and Nambé, all near Santa Fé. The writer acknowledges his deep indebtedness to Miss B. W. Freire-Marreco, whose study of the social and governmental organization of the Tewa has given her a rare insight into the Tewa customs of expressing relationship and the like.

No other set of relationship terms of Southwestern Indians has been studied in which the classificatory system is so little developed as in Tewa. The writer believes that in the common talk of the Tewa Indians more descriptive terms denoting relationship are used than even in our highly analytic English system.

The peculiar use of postjoined *'ε* in many of the terms is worthy of further attention than can be given to it in the present paper. It appears that nothing like it has been discovered in any other Southwestern language. The original meaning of *'ε* seems to be 'offspring,' 'son,' 'daughter.' Postjoined to any term denoting blood-relationship with the exception of *tara* 'father', *jija* 'mother', and *m̥ʔm̥ʔ* 'male cousin', it gives what the younger of two relatives by descent calls the elder by descent. Thus: *nabi t'εt'ε*, 'my grandfather', . . . response: *nabi t'εt'ε*, 'my grandchild'; *nabi sa'a'ja*, 'my grandmother', . . . response: *nabi sa'a'ja*, 'my grandchild.' *tp'uŋŋ*, 'uncle,' forms *tp'ε*, 'nephew or niece of an uncle,' not *tp'uŋŋ'ε*, as we should expect. *tara'ε* and *jija'ε* are merely familiar forms of *tara* and *jija*, 'father' and 'mother,' like German *Väterchen* and *Mütterchen*, although we have regularly enough *nabi kwatara'ε*, 'my stepchild,' said by a father, and *nabi kwajija'ε*, 'my stepchild,'

said by a mother. With this system of nomenclature it is interesting to compare such English usages as when a child says: "Auntie!" and its aunt answers, "O you dear Auntie's child!" Thus, also, in Tewa: "*kc'c*," 'aunt!'—response: "'*μ'μ kc'c'ε*," 'you nephew or niece!' But Tewa *kc'c'ε* signifies nephew or niece of an aunt irrespective of age or condition. This same 'ε is also the common diminutive-forming postjunct of the language, and can as such be added to relationship terms which already end in 'ε. Thus *kc'c'ε'ε*, 'little nephew or niece of an aunt' (*kc'c'ε*, nephew or niece of an aunt; 'ε, diminutive). For the sake of brevity, 'ε has been called the diminutive in giving etymologies in this paper. Some of the terms that indicate relationship through marriage may also add 'ε with this same peculiar force. The meaning of *mā'εmā'ε* seems to be irregular. (See below.)

Separate terms are used to express relationship through marriage, with the exception of *tara*, *tara'ε*, *jija*, *jija'ε*, *μ'μnp*, *μ'ε*, *kc'c*, *kc'c'ε*, *mā'εmā'ε*. The words meaning 'man' and 'woman' may also be used to signify 'husband' and 'wife,' just as in many other languages, although special terms with the latter meaning are also in use. Thus one may express 'my husband' in six ways:

nabi i'cwā,
nabi sεη,
nabi sεη,
nabi sεndε,
nabi tara,
nabi tara'ε,

and 'my wife' in the following five:

nabi i'cwā,
nabi kwi,
nabi kwiε,
nabi jija,
nabi jija'ε.

The Tewa live compactly in villages, and probably a larger number of individuals see one another daily than is the case with most non-Pueblo Indians. Moreover, the names of the dead are freely mentioned by the Tewa and the relationships of the dead are freely

discussed. Nevertheless, remote relationships do not appear to be remembered or kept account of as well as among such tribes as the Ute or the Yuma. It may be, of course, that in modern times the Tewa have become careless in this respect.

The free everyday use of relationship terms between individuals who are not actually related as the terms indicate is encountered everywhere in the Southwest. The custom is explained as a spontaneous expression of a deep feeling of friendship or kinship that runs through the thought of the Indians. Especially when misfortune or sorrow are present relationship terms are freely indulged in. Among the Yumans of the lower Colorado river valley one hears this custom carried to the extreme on the occasion of a cremation. While standing about the burning pyre, individuals who have no known relationship to each other embrace, or one lays hands on the other, and one hears amid their sobs, "Oh, my younger brother," "Oh, my elder brother," or any other terms which seem appropriate.

A number of the Tewa terms have peculiar usages aside from their primary usage, being employed in addressing certain officers, divinities, and the like. Some of the terms have what seem to the English speaker to be several meanings. Thus: *t'cwa* signifies 'person,' 'people,' 'human being as distinct from other animals,' 'husband,' 'wife,' 'tribe,' 'clan,' 'phratry,' 'Indian as distinct from other peoples.' To the Tewa mind *t'cwa* seems to be the label of a single conception.

The Tewa practise monogamy, marriage being celebrated or solemnized by a native and also by a Christian ceremony. Unmarried girls are frequently used by young men and sometimes by older men, although there is now not so much of this "immorality" as formerly. It used to be common for a girl's first babe to be born before marriage. There is a woman now living at San Ildefonso who has given birth to three children without being married. The courtships are usually very shy. The man must obtain permission from the girl's parents before wedding her. It is well known by the villagers that certain women have lewd tendencies. Women who have illicit intercourse with Mexicans or Americans are looked

down upon by other members of the tribe. But there is no prejudice at all against a Tewa girl or woman marrying a Mexican or American in the regular way. Mr Thomas S. Dozier, an American of Española, has been married to a Santa Clara woman for years, and she has borne him eight children. The Indians appear to be quite proud of this union. Mr Eulogio Cata, an Indian of San Juan, has a Mexican wife, and it is the opinion of the Indians of San Juan that he has married well. The people usually keep quite straight in sexual matters and are mostly free from genital diseases. At present the men live with their wives and children and are uncertain whether Tewa men in ancient times slept in the kivas or with their wives and children as at the present time.

The clans at the Tewa villages are fairly numerous. A tentative list of Tewa clans is given by Mr F. W. Hodge in his article on Pueblo Indian Clans.¹ Each clan occupies a certain locality in the pueblo. Tewa children belong to the clan of the father. The clans of each village are united in two groups or phratries—the *tenuri'ĩn'cwā*, 'winter people', and the *pajgeri'ĩn'cwā*, 'summer people.' A clan, wherever it occurs, always belongs to the same phratry. The "winter people" are also called *k'uhg'owā*, 'turquoise people'; the "summer people" are also called *pot'owā*, 'squash people'. A turquoise clan, if it occurs, belongs to the winter people, a squash clan to the summer people.

The government is in the hands of many officers, all of whom have religious as well as governmental functions. Matters pertaining to social organization and government are as difficult to investigate as are the religious ideas and practices of the Tewa. Miss B. W. Freire-Marreco furnished the writer with the following account of naming, for which she in turn is indebted to Miss Clara True, of the Española valley. Four days after birth the naming ceremony takes place. Before sunrise a female relative of the mother comes to the house where the mother and infant are to be found. The father holds the child up, standing in the doorway. The female relative has previously placed sacred water in one side of a two-bowled vessel of peculiar shape and sacred meal in the other side.

¹ *American Anthropologist*, vol. ix, no. 4, Oct. 1896, pp. 345-352.

She now sprinkles the water and meal by means of her hand from the vessel in the direction of the rising sun while the father holds the child aloft, and she gives the child not more than four names appropriate to the season. She may give only one name, but most children receive two or three. After this ceremony the mother is supposed to go to bed for four days more. She is really up and about most of the time. About the eighth day the child is taken to be baptized in the Catholic church. Certain names are appropriate to children born in certain months. The female relative who sprinkles the meal and water knows names suitable to the season. She is chosen by the child's mother. It is not clear whether she must be a real relative. Some of the details given above relative to naming agree with fragmentary information obtained by the writer. Most adults have only one Indian name, which is always a compound word made by putting together two simple words so that the whole has a meaning. In many instances nicknames are applied, or only a part of the full compound name is in use. As typical men's names of San Ildefonso we might name in translation: Quivering Stars, White Cloud, Medicine Mountain, Daylight Mountain, Sun Bird, Cloud Stick, Cloud Painting, Rockpine Bird, Falling Flower, Macaw Bird, Eagle Tail, Bluebird Tail, Mountain Lion Mountain, Sun Painting, Cottonwood Yellowness Quivering (referring to a species of yellow bird seen jumping in the cottonwoods), White Lake, Mountain Wood, Little Mountain, Willow Bird. Some of the women's names are in translation: Leaf Bird (referring to an actual species of bird), White Flower, Waco Flower, Opuntia Flower, Mountain Water, Sun Leaf, Flower Leaf (that is, "petal"), Mountain-Lion Stalk (that is, "fern"), Squash Flower, Abalone Zigzag, Flower Frost, Yellow Flower, Yellow Leaf, Rose Flower, Flower Zigzag, Aspen Flower, Spruce Zigzag, Blue Turquoise, Lake Frost, All-colored Flower, Yucca Baccata Flower. Each Indian has also a Spanish name, the given part of which is received at the baptism. The Tewa know the Spanish names of most of the adult Tewa of the same village, although when talking among themselves only the popular forms of the Tewa names are used. At a non-progressive pueblo, such as the

Keres village of Santo Domingo, the Spanish names of Indians are surprisingly little known and used.

The Tewa relationship terms will be presented below under four heads: consanguinity, relationship through marriage, sex and age, and miscellaneous. In the case of consanguinity and relationship through marriage the items are headed by Indian words; for miscellaneous, English terms serve to introduce the various items.

Immediately following each relationship term listed below under consanguinity and relationship through marriage will be found indicated in parentheses whether the term may be applied by male only, by female only, or by both male and female. (m.) stands for male, (f.) for female, (m. f.) for male or female.

The 2+ plural of the relationship terms given below is the same as the singular with the following exceptions: 'ε, 'son,' 'daughter,' when not compounded can have either 'ε or 'εñε in the 2+ plural; terms ending in 'i' change this 'i' to 'iη in the 2+ plural.

Each of the relationship terms has been tested and investigated by applying it to a considerable number of actual relationships, using Indians' names. Only the results of this work are here presented; the details are omitted.

We have in Tewa: (a) terms applied by persons of one sex only to persons of either sex, e. g., *kε'c'ε*; (b) terms applied by persons of either sex to persons of one sex only, e. g., *mε'εmε*; (c) terms applied by persons of one sex only to persons of one sex only, e. g., *sεη*; (d) terms applied by persons of either sex to persons of either sex, e. g., *pa'εε*.

The diagrams illustrate the system of nomenclature for consanguineous relationship only. Each diagram represents two collateral lines for four generations. They are self-explanatory. All the possible blood-relationships for which there is a special expression in Tewa are indicated in the diagrams.

The symbols used in writing Tewa and other Indian words in this paper have the following values. The italicized letter or letters of the word in parentheses accompanying each symbol indicates approximately the pronunciation.

(1) Orinasal vowels: μ (Eng. father, nasalized), φ (Eng. man, nasalized), ϵ (mod. Greek ϵ , nasalized), j (Eng. routine, nasalized), \hat{a} (French *pas*, nasalized), ζ (mod. Greek ω , nasalized), μ (Eng. rule, nasalized).

(2) Oral vowels: a (Eng. father), ϵ (mod. Greek ϵ), i (Eng. routine), e (mod. Greek ω), u (Eng. rule).

(3) Semivowels: j (Ger. *ja*), w (Eng. war).

(4) Larynx consonants: ' (glottal stop), h (Eng. *how*).

(5) Dorsal consonants: k (Vienna German *gehen*), kw (Vienna German *gehen*, labialized), k' (glottalized k), k' (aspirated k), ηg (Eng. *finger*), g (Spanish *abogado*), gw (Scotch English *what*), η (Eng. *sing*), ηw (Eng. *Langworthy*).

(6) Frontal palatalized consonants: \tilde{n} (Sp. *mañana*).

(7) Frontal consonants: t (Vienna German *du*), t' (glottalized t), t' (aspirated t), nd (Eng. *bandanna*), r (Eng. *run*), ts (German z , but not aspirated), ts' (glottalized ts), s (Eng. *see*), tf (Eng. *chew*, but not aspirated), tf' (Eng. *chew* glottalized), f (Eng. *ship*), n (Eng. *now*).

(8) Lip consonants: p (Vienna German *baff*), p' (glottalized p), p' (aspirated p), mb (Eng. *Jumbo*), b (Sp. *abogado*), m (Eng. *man*).

Superior vowels indicate very short vowel sounds following a glottal stop. In such sounds the voice is apt to be grating or *knarrstimmig*. Syllables over the vowel of which the grave accent is written do not have as loud stress accent as other syllables.

CONSANGUINITY

Self

$n\hat{a}$ (m. f.). I, myself.

Direct Line

tara (m. f.). (1) 'Father.' As exclamation: *tara*, 'father!' The Mexican loanword *tata* is also in common use, meaning 'father.'

(2) Figuratively. Thus: $n\hat{a}'jmbi tara jcs\hat{a}$, our Father, God ($n\hat{a}$, I; $j\eta$, 2+ plu. animal gender; \hat{a} , possessive; *tara*, father; *jcs\hat{a}, God, < Sp. *Dios*, *Dioses*). (3) Applied by a wife to her husband, who often calls him *tara*, 'father,' as the children of the family do. (4) Applied to the Winter cacique. The Summer*

cacique is called *jija*, 'mother.' (5) Compounded in *tarasəndc*, 'aged sire' (*tara*, father; *səndc*, old man), a term used in addressing old men for whom great respect is shown, especially in addressing the Winter cacique. Sometimes abbreviated to *tasəndc*. (6) Compounded as in *tarapi-*, 'fatherless,' 'orphan' (*tara*, father; *pi*, negative).

tara'e (m. f.) (*tara*, father; 'e, diminutive). Familiar diminutive form of *tara*, 'father.' Used same as *tara* with meanings (1), (2), and (3).

tatà (m. f.) (< Sp. *tata*, father, papa). (1) 'Father', 'papa', 'dad', in almost any sense in which *tara*, 'father,' is used, even in sacred language as *tatà jcsì*, 'Father God' (*tatà*, father, < Sp. *tata*; *jcsì*, God, < Sp. *Dios*, *Dioses*). (2) Applied loosely to father, elder brother, father's brother, or other relatives older than self. According to Miss B. W. Freire-Marreco a child at Santa Clara applied *tatà* to its mother's brother, but this was considered to be a child's mistake.

Terms used in addressing respected old persons. Old men for whom respect or reverence is shown should be accosted as *tarasəndc* (*tara*, father; *səndc*, old man), often abbreviated to *tasəndc*; for old women for whom like respect or reverence is shown *jijakwjc* (*jija*, mother; *kwjc*, old woman), often abbreviated to *jakwjc*, is used. Since the Winter cacique is called *tara*, 'father,' he should be addressed as *ta(rasəndc)*, while the Summer cacique, who is the *jija*, 'mother,' of the Indians, is spoken to as *j(ij)akwjc*. In working and walking about with the old Winter cacique of Nambé the writer noticed that he was always addressed by the Nambé Indians as *ta(rasəndc)*.

It is barely possible that *tatà* is of Tewa as well as of Spanish origin. The Tewa do not recognize the Spanish origin of the word.

tatà'e (m. f.) (*tatà*, father, < Sp. *tata*; 'e, diminutive). Familiar diminutive form of *tatà*, 'father.' Used the same as *tatà* with meanings (1) and (2).

jija (m. f.) (cf. Keres *jája*, mother). (1) 'Mother.' As exclamation: *jija*, 'mother!' (2) Figuratively. Thus; *ná'ĩmbi jija*,

'our mother,' said of a certain nameless divinity (*nā*, I; 'ī, 2+ plu. animal gender; *bi*, possessive; *jija*, mother). (3) Applied by a husband to his wife, who often calls her *jija*, 'mother', as the children of the family do. (4) Applied to the Summer cacique. The Winter cacique is called *tara*, 'father.' (5) Compounded in *jijakwije*, 'aged dame' (*jija*, mother; *kwije*, old woman), a term used in addressing old women for whom great respect is shown; also in addressing the Summer cacique. Sometimes abbreviated to *jakwije*. (6) Compounded as in *jijapi*, 'motherless,' 'orphan' (*jija*, mother; *pi*, negative); *papajija*, 'great grandmother' (*papa*, great grandfather; *jija*, mother). *jija'e* (m. f.) (*jija*, mother; 'e, diminutive). Familiar diminutive form of *jija*, 'mother.' Used same as *jija* with meanings (1), (2), and (3).

'e (m. f.). (The singular has falling intonation. For the 2+ plu. two forms are in use: (a) 'e, same as sing. but with rising-falling intonation; (b) 'eñā. (1) 'son', 'daughter'. (2) In the expression *sēndēbi* 'e *kwijebi* 'e, 'children of the old man and the old woman,' that is, of the Winter cacique and the Summer cacique, 'the Indians of the pueblo.' (3) Familiarly and loosely: 'child,' 'dear.' Thus: *mbihuña*, *nabi* 'e, 'eat, girls!' (*mbi*, you 2+; *huña*, to eat; *nabi*, my; 'e, son, daughter). (4) 'girl sweetheart.' Thus in a song: *agēje pēbi*, *nabi* 'e, *wimbe* 'e *winda* 'a, 'Star Flower, thee only do I love' (*agēje*, star; *pēbi*, flower, *nabi*, my; 'e, son, daughter; *wimbe* 'e, alone; *wi*, I you 1; *nda* 'a, to want, to love). (5) Postjoined to any noun in the language as diminutive particle. When thus used the 2+ plural is never 'eñā. Thus: *k'u*, 'stone'; *k'u* 'e, 'little stone.'

'ete (m. f.). (1) 'Grandfather,' that is, father's father or mother's father. (2) Applied to the *tsabije*, Sp. "abuelo." An Indian personified as this divinity goes about on certain occasions whipping the children of the village. He is always called 'ete, 'grandfather.' (3) Compounded as in *papa'ete*, 'great grandfather' (*papa*, great grandfather; 'ete, grandfather).

'ete'e (m.) ('ete, grandfather; 'e, diminutive). 'Grandson', 'granddaughter', that is, son's son, son's daughter, daughter's son, daughter's daughter.

- sa'a'ja* (m. f.). (1) 'Grandmother', that is, father's mother, mother's mother). (2) Compounded as in *papasa'a'ja*, 'great grandmother' (*papa*, great grandfather; *sa'a'ja*, grandmother).
- sa'a'ja'e* (f.) (*sa'a'ja*, grandmother; 'e, diminutive). 'Grandson', 'granddaughter', that is, son's son, son's daughter, daughter's son, daughter's daughter.
- papa* (m. f.). (1) 'Great grandfather', that is, father's father's father, father's mother's father, mother's father's father, mother's mother's father. Also commonly used in expressions such as *l'elebi papa*, 'grandfather's great grandfather', 'male ancestor'. (2) Compounded as in *papat'ele*, 'great grandfather' (*papa*, great grandfather; *l'ele*, grandfather), etc. The form *papa* appears in all non-analytic expressions denoting the third generation removed.
- papa'e* (m.) (*papa*, great grandfather; 'e, diminutive). 'Great grandson', 'great granddaughter', that is, son's son's son, son's son's daughter, son's daughter's son, son's daughter's daughter, daughter's son's son, daughter's son's daughter, daughter's daughter's son, daughter's daughter's daughter.
- papat'ele* (m. f.) (*papa*, great grandfather; *l'ele*, grandfather). 'Great grandfather', that is, father's father's father, father's mother's father, mother's father's father, mother's mother's father. Perhaps commoner than mere *papa*, which has the same meaning.
- papat'ele'e* (m.) (*papat'ele*, great grandfather; 'e, diminutive). 'Great grandson', 'great granddaughter', that is, son's son's son, son's son's daughter, son's daughter's son, son's daughter's daughter, daughter's son's son, daughter's son's daughter, daughter's daughter's son, daughter's daughter's daughter.
- papasa'a'ja* (m. f.) (*papa*, great grandfather; *sa'a'ja*, grandmother). 'Great grandmother', that is, father's father's mother, father's mother's mother, mother's father's mother, mother's mother's mother.
- papasa'a'ja'e* (f.) (*papasa'a'ja*, great grandmother; 'e, diminutive). 'Great grandson', 'great granddaughter', that is, son's son's son, son's son's daughter, son's daughter's son, son's daughter's

daughter, daughter's son's son, daughter's son's daughter, daughter's daughter's son, daughter's daughter's daughter.

papajija (m. f.) (*papa*, great grandfather; *jija*, mother). 'Great grandmother,' that is, father's father's mother, father's mother's mother, mother's father's mother, mother's mother's mother. Equivalent to *papasa'ja*. A corresponding masculine form, *papalara* (*papa*, great grandfather; *lara*, father) is not used.

papajija'e (f.) (*papajija*, great grandmother; *'e*, diminutive). 'Great grandson,' 'great granddaughter,' that is son's son's son, son's son's daughter, son's daughter's son, son's daughter's daughter, daughter's son's son, daughter's son's daughter, daughter's daughter's son, daughter's daughter's daughter.

Collateral Lines

pa're (m. f.). (1) 'Elder brother', 'elder sister', 'brother or sister older than self'. The Tewa render *pa're* in Spanish by *hermano* or *hermana*, according to the natural gender. The other Tanoan languages formally distinguish sex in the designations of elder brother or elder sister. Thus: Isleta *'impapei*, 'my elder brother'; *'intutej*, 'my elder sister'; Taos *'gnpapanā*, 'my elder brother'; *'gnituna*, 'my elder sister'; Jemez *nj'upap'e*, 'my elder brother'; *nj'ukck'a'e*, 'my elder sister'. Tewa stands alone in not formally distinguishing sex in this relationship term; it will be noticed that the words in the other Tanoan languages meaning 'elder brother' seem to contain the same root as Tewa *pa're*. As an adjective *pa're* means 'first.' Thus: *k'u pa're'i'i*, 'the first stone' in a row. If one has several *Geschwister* elder than self they may be distinguished thus: *pa're pa're'i'i*, 'eldest brother' (*pa're*, elder brother or sister; *pa're*, first; *i'i*, postfix denoting sing., animal gender); *pa're pa're'iri'i*, 'elder brother or sister next in age to eldest brother or sister' (*pa're*, elder brother or sister; *pa're*, first; *'iri*, next following; *i'i*, postfix denoting sing., animal gender); *pa're (pa're)pcwinge'iri'i*, 'elder brother or sister second in age to eldest brother or sister' (*pa're*, elder brother or sister; *pa're*, first; *pcwinge*, in the third place; *'iri*, next following; *i'i*, post-

self. (3) The senior officer or officers of each governmental body. Miss Barbara Freire-Marreco informs the writer that the "capitan mayor" is *pa're* to the other "capitanes," the "fiscal

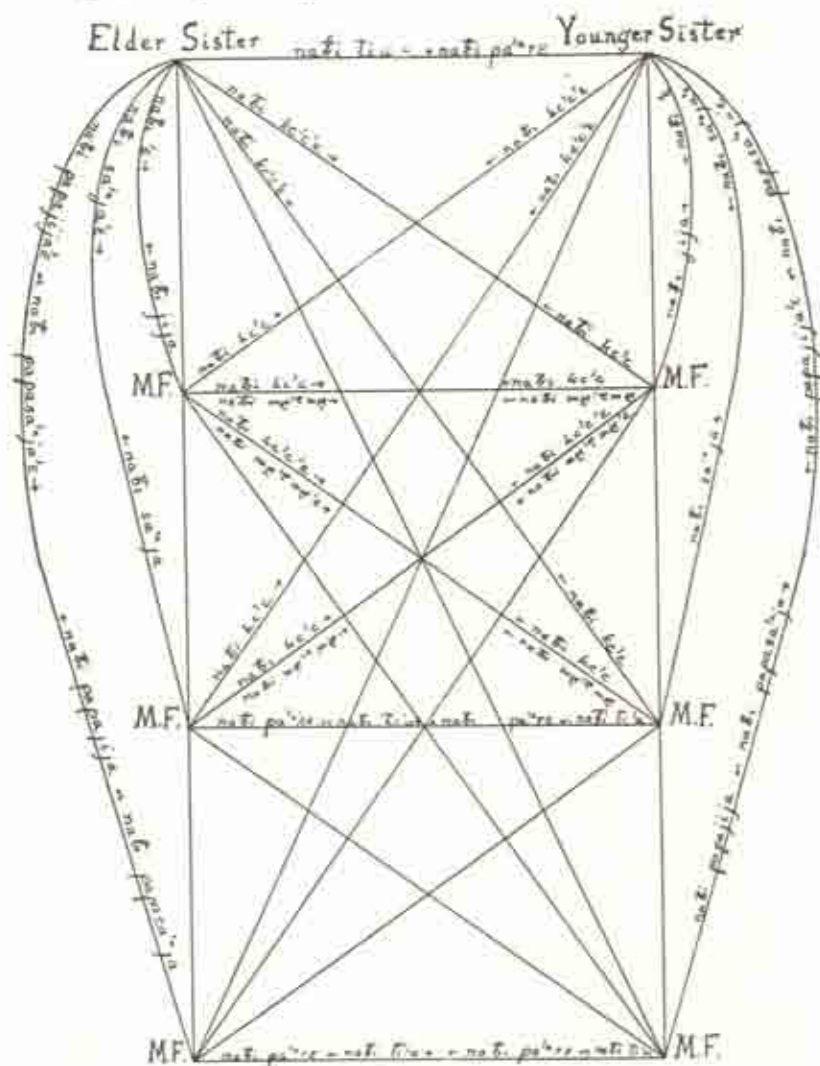


FIG. 56.

mayor" *pa're* to the other "fiscales"; the Summer cacique is *pa're* to Elisio Paladura and José Guadalupe at Santa Clara.

express the official relation of Chief Special Officer W. E. Johnson to his assistant, Miss Clara True. (6) Applied to a Catholic monk or nun. This usage is based on Sp. *los Hermanos*, 'the

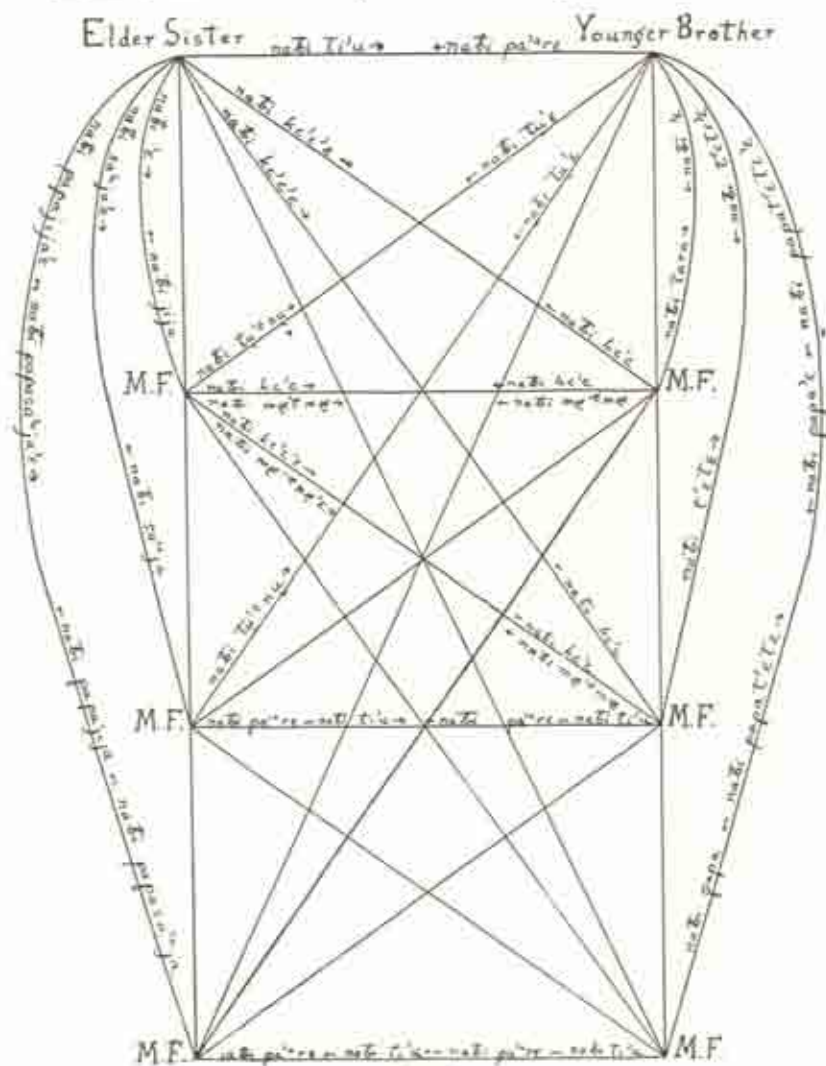


FIG. 58

Brothers'; *las Hermanas*, 'the Sisters'. (7) Compounded as in *ti'upa'are*, 'younger persons and elders' (*ti'u*, younger brother

or sister; *pa'are*, elder brother or sister). This term is said to be used especially in council.

ti'u (m. f.). (1) 'Younger brother,' 'younger sister,' 'brother or sister younger than self.' The Tewa render *ti'u* in Spanish by *hermanito* or *hermanita*, according to the natural gender. The other Tanoan languages formally distinguish sex in the designations of younger brother or younger sister. Thus: Isleta *'imp'ai'uej*, 'my younger brother'; *'imp'atuej*, 'my younger sister'; Taos *'anp'ainá*, 'my younger brother'; *'anp'aju'uná*, 'my younger sister'; Jemez *nj'upelu'e*, 'my younger brother'; *nj'upa'e*, 'my younger sister'. Tewa stands alone, as in the case of *pa'are*, in not formally distinguishing sex in this relationship term. It will be noticed that the Isleta term meaning younger sister and the Jemez term meaning younger brother may contain a syllable akin to Tewa *ti'u*. As in the case of *pa'are*, the sex of the *ti'u* may be indicated by adding one of the age-sex nouns. (2) Loosely applied to second, third, or fourth cousin or other relative or person younger than self. (3) Applied to a novice, a person newly initiated. (4) Compounded as in the expression *ti'upa'are*, 'younger persons and elders'. See above under *pa'are*.

tu'tnu (m. f.). (1) 'Uncle,' that is, father's elder brother, father's younger brother, mother's elder brother, mother's younger brother. Miss Freire-Marreco says that *tata* is also heard designating this relationship. (2) 'Great uncle,' that is, grandfather's or grandmother's elder or younger brother. This relationship is also expressed by a descriptive term such as *t'elebi ti'u* 'grandfather's younger brother (or sister)' (*t'ele*, grandfather; *bi*, possessive; *ti'u*, younger brother or sister). (3) Also used loosely, and of certain relationships through marriage. For the latter, see below.

tu'e (m.) (*tu*, in this compound equivalent to *tu'tnu*; *e*, diminutive). (1) 'Nephew,' 'niece,' that is, elder or younger brother's or sister's son or daughter. (2) 'Great nephew,' 'great niece,' that is, elder or younger brother's or sister's son's or daughter's son or daughter. (3) Also used loosely, and of certain relationships through marriage. For the latter, see below.

ké'c (m. f.). (1) 'Aunt,' that is, father's elder sister, father's younger sister, mother's elder sister, mother's younger sister. (2) 'Great aunt,' that is, grandfather's or grandmother's elder or younger sister. This relationship is perhaps more frequently expressed by a descriptive term. (3) Female first cousin (German *Base* or *Cousine*). (4) Aunt second removed. (5) Also used loosely, and of certain relationships through marriage. For the latter, see below.

ké'c'é (f.). (*ké'c*, aunt; 'é, diminutive). (1) 'Nephew,' 'niece,' that is, elder or younger brother's or sister's son or daughter. (2) 'Great nephew,' 'great niece,' that is, elder or younger brother's or sister's son's or daughter's son or daughter. (3) Female cousin second removed. (4) Also used loosely, and of certain relationships through marriage. For the latter, see below.

mæ'ʔmæ (m. f.). (1) 'Male first cousin' (German *Vetter* or *Cousin*). According to Miss Freire-Marreco *latá* is also used for this relationship. (2) 'Uncle second removed.' (3) Also used loosely, and of certain relationships through marriage. For the latter, see below.

mæ'ʔmæ'é (m. f.). (*mæ'ʔmæ*, male first cousin; 'é, diminutive). (1) 'Male cousin second removed.' (2) Also used loosely, and of certain relationships through marriage. For the latter, see below.

RELATIONSHIP THROUGH MARRIAGE

Descriptive terms denoting relationship through marriage are even commoner than those denoting consanguineous relationship. Thus one may say *nabi sçmbi tara*, 'my father-in-law' (*nabi*, my; *sçñ*, husband; *bí*, possessive; *tara*, father), instead of *nabi jasçndc*, 'my father-in-law', etc.

l'cwà (m. f.). 'Husband,' 'wife.' The word has also several other meanings. See elsewhere in this paper.

sçñ (f.). 'Husband.' This is said to be an old word, very little used at present.

sçñ (f.). 'Man in prime,' 'husband.' See also under sex-age nouns.

sçndc (f.). 'Old man,' 'husband.' See also under sex-age nouns. Cf. Sp. *mi viejo*.

tara (f.). 'Father,' 'husband.' Often used just as wives call their husbands "father" in English, German, and Spanish.

tara'e (f.). (*tara*, father, husband; 'e, diminutive). Familiar diminutive of *tara*, 'father'. 'Father', 'husband'. Cf. *tara*, above.

kwi (m.). 'Woman in prime,' 'wife.' See also under sex-age nouns.

kwiɛ (m.). 'Old woman,' 'wife.' See also under sex-age nouns. Cf. Sp. *mi vieja*.

jija (m.). 'Mother,' 'wife.' Often used just as husbands call their wives "mother" in English and German.

jija'e (m.). (*jija*, mother, wife; 'e, diminutive). Familiar diminutive of *jija*, 'mother'. 'Mother,' 'wife.' Cf. *jija*, above.

sa'i' (m.). 'Bride' already married or about to be married.

jasɛndɛ (m. f.). (*ja*, as also in *jakwiɛ*, see below; *sɛndɛ*, old man). 'Father-in-law,' that is, husband's father, wife's father.

jakwiɛ (m. f.). (*ja*, as also in *jasɛndɛ*, see above; *kwiɛ*, old woman). 'Mother-in-law,' that is, husband's mother, wife's mother.

sɛŋŋɛ (m. f.). (1) 'Son-in-law' that is, daughter's husband. (2) Applied to son's daughter's husband or to daughter's daughter's husband. (3) Loosely applied to son-in-law of relative or other person. Thus at Santa Clara L. T. calls S. N.'s son-in-law *sɛŋŋɛ*, just as S. N. himself does. L. T. is S. N.'s uncle once removed.

sa'e (m. f.). (*sa*, ? ; 'e, diminutive?). (1) 'Daughter-in-law', that is, son's wife. (2) Applied to son's son's wife or daughter's son's wife. (3) Loosely applied to daughter-in-law of relative or friend.

ja'a (m. f.). 'Any consanguineous relative of husband or wife.' Used mostly to denote distant or vague relationships of this sort. For greater definiteness descriptive terms are used instead of *ja'a*. When *ja'a* is applied by a wife to her husband's relatives, it is equivalent to *matc'i'*.

matc'i' (f.). 'Any consanguineous relative of husband.' Used mostly to denote distant or vague relationships of this sort. For greater definiteness descriptive terms are used. The term *ja'a*, see above, may be substituted for *matc'i'* in every instance.

tu'mnu (m. f.). 'Husband of *kc'c*,' which means 'aunt,' etc. See above. The primary meaning of *tu'mnu* is 'consanguineous uncle'. See above. But when *kc'c* means female cousin *mɛ'ɛmɛ* must be used instead of *tu'mnu*. See below.

tu'e (m.) (for etymology see above), 'Husband of *kc'c'e*,' which means 'niece,' etc. See above. The primary meaning of *tu'e* is 'consanguineous nephew or niece.' See above. But when *kc'c'e* means female cousin twice removed, *mɛ'ɛmɛ'e* must be used instead of *tu'e*. See below.

kc'c (m. f.). 'Wife of *tu'mnu*,' which means 'uncle,' etc. See above. The primary meaning of *kc'c* is 'consanguineous aunt,' etc. See above.

kc'c'e (f.) (for etymology see above). 'Wife of *tu'e*,' which means 'nephew,' etc. See above. The primary meaning of *kc'c'e* is 'consanguineous nephew or niece.' See above.

mɛ'ɛmɛ (m. f.). 'Husband of *kc'c* when the latter word means consanguineous female cousin.' For the husband of *kc'c* in other meanings *tu'mnu* and not *mɛ'ɛmɛ* is used. The primary meaning of *mɛ'ɛmɛ* is 'consanguineous male first cousin.' See above.

mɛ'ɛmɛ'e (m. f.). 'Husband of *kc'c'e* when the latter word means 'consanguineous female cousin twice removed'. For the husband of *kc'c'e* in other meanings *tu'e* and not *mɛ'ɛmɛ'e* is used. The primary meaning of *mɛ'ɛmɛ'e* is 'consanguineous male cousin twice removed'. See above.

Step-relationship. Step-relationship is indicated by prejoining *kwa* to any one of the relationship terms. Thus: *kwatara*, 'step father' (*kwa*, step-; *tara*, father). *nabi kwasa'eja*, 'my step-grandmother', has both meanings of English step-grandmother: my grandfather's wife not my mother or my real or step-father's or mother's step-mother. As in the case of English *step*-, *kwa*- is often omitted. The only irregularity which the usage of *kwa*-compounds presents is that no such form as *kwa'e* exists. Stepson or stepdaughter is called by the father *kwatara'e* (*kwa*, step-; *tara*, father; 'e, diminutive), by the mother *kwajija'e* (*kwa*, step-; *jija*, mother; 'e, diminutive).

Thus without *kwa* prejoined *tara*'ε and *jija*'ε mean merely father and mother; with *kwa* prejoined they mean stepson or stepdaughter of father and stepson or stepdaughter of mother.

Bachelor, old-maid. 'Unmarried person,' whether young or old, can be expressed only by descriptive terms. Thus: *wingkwimupi*, 'he has no wife' (*wi*, negative; *nā*, he-her; *kwi*, woman in prime, wife; *mu*, to have; *pi*, negative); *wingseqmupi*, 'she has no husband' (*wi*, negative; *nā*, she-him; *seq*, man in prime, husband; *mu*, to have; *pi*, negative). Such expressions are also applied to celibates, such as Catholic priests, monks, and nuns.

Widower, widow. Such expressions as the following might be used: '*idi kwi*' *muifu*, 'his wife is dead' ('*i*, he; *bi*, possessive; *kwi*, woman in prime, wife; '*mu*', she with reference to him; *ifu*, to be dead); '*idi seq*' *muifu*, 'her husband is dead' ('*i*, she; *bi*, possessive; *seq*, man in prime, husband; '*mu*', he with reference to her; *ifu*, to be dead).

SEX AND AGE

The following terms denote combinations of sex and age.

'ε (2 + plu. 'ε or 'εñε). This word means 'baby', 'infant', 'child' as well as 'son', 'daughter', 'girl sweetheart' given above.

'ε'εnukε (2 + plu. 'ε'εnuη'εñε), 'young boy.'

'a'ānukε (2 + plu. 'a'ānuη'εñε), 'young girl.'

'ε'εnu (2 + plu. 'ε'εnuη), 'boy at adolescence.' Sometimes also used of a boy who has not yet had intercourse.

'a'ānu (2 + plu. 'a'ānuη), 'girl at adolescence.' Sometimes also used of a girl who has not yet had intercourse.

seq (2 + plu. seqnε'εη), 'man in prime'.

kwi (2 + plu. kwinnε'εη), 'woman in prime'.

sεndε (2 + plu. sεnda), 'old man.' Also used very much in addressing or speaking of old people for whom respect is shown, especially an aged head of a family or master of a house. It would not be applied to a man under forty or forty-five years of age, although the Tewa age quickly. Note also special usages mentioned elsewhere.

kwijc (2 + plu. *kwijc* with rising-falling intonation of last syllable; the singular has falling intonation of last syllable). The word is used much as is *sɛndc* to show respect for aged women. Note also special usages mentioned elsewhere.

MISCELLANEOUS

Relationship terms figuratively used. Relationship terms are applied very freely to persons who do not bear the relationship the terms indicate. Children are taught to apply the proper words to non-relatives as well as relatives as soon as they can talk. By a certain child one of the parents' more elderly male friends was called *tara*, 'father'. A younger male friend of the family but older than the child itself was called *pa'are*, 'elder brother'. The wife of the friend called *tara* was termed *sa'aja*, 'grandmother', and not *jija*, 'mother', although the latter term corresponds to *tara*, 'father'. Miss Freire-Marreco reports that when living at Santa Clara village she was called *sa'aja*, 'grandmother', by the younger generation, while by the older people she was called *kɛ'c*, 'aunt', 'female cousin'. One entire family of intimate friends called her *sa'aja*. Perhaps the idea in doing so was that *sa'aja* implies a closer relationship than *kɛ'c*.

Relationship terms are frequently used before or after Indian names, especially nicknames. Thus: *sa'aja sebɛ*, 'Grandma Beard', was applied to a lady who had a growth of hair on the face; *tsirɛ sɛndc*, 'old bird', is universally applied to the aged Winter cacique of Nambé, although his real name is a compound of *tsirɛ*, 'bird,' with some other word.

Tewa of about the same age who are not intimately related are likely to call each other *ti'u*, 'younger brother or sister', and *pa'are*, 'elder brother or sister'. Second or third cousins or other distant relatives of approximately the same age are also apt to call one another *ti'u* or *pa'are*.

Mr Santiago Naranjo, governor of Santa Clara in 1911, has said: "I wish to see all these people calling each other brother and-sister, uncle and aunt." Another Santa Clara Indian has

stated: "When people are drunk at a wedding one hears nothing but *tí'u*, *pa're*, *kc'e*, *kc'e'e*, etc."

When people of one Tewa village greet those of another Tewa village, appropriate relationship terms are regularly used. On such occasions one also hears frequently the word *k'emà*, 'friend.' Indians from non-Tewa pueblos and who do not speak Tewa are addressed by the Tewa in Spanish as *hermano*, *hermana*, *hermanito*, *hermanita*, *tata*, *tio*, *tia*, etc. Less frequently, perhaps, *compadre* or *amigo* are applied by the Tewa to alien Indians, these words being reserved for Americans or Mexicans if these be greeted at all. In the summer of 1910 the writer drove from Jemez to Bernalillo in company with an Isleta Indian. The Indian drove the team, the writer walked on ahead. Almost the entire population of Santa Ana pueblo passed us either singly or in groups of two to half a dozen. The Santa Ana people had been working in their fields by the Rio Grande and were bound homeward to attend a dance-festival to be held on the following day. Only one or two of all these Indians deigned to answer the writer when he bade good evening in a most friendly manner in Spanish, although the Isleta Indian who followed along behind was warmly greeted as *hermano*. The Tewa also frequently greet alien Indians by *k'emà*, 'friend.' Such words as Tewa *k'emà*, Jemez *k'ábá*, Taos *ʔanpuiwái*, Santo Domingo *sáúke*, meaning 'friend' are known to most Pueblo Indians, even though knowledge of some of the languages on the part of some extends no further.

Use of tata. As stated above, it is not certain whether this word is of Mexican or Tewa origin. It is used much by the Tewa both in speaking Spanish and Tewa. Its primary meaning appears to be 'father,' but it is applied indiscriminately to male persons a great deal older than the speaker. It is also used of God in the sense of Father. The corresponding Spanish feminine form *nana* appears not to be used in Tewa. Spanish *papá* and *mamá* appear also to be used in Tewa little or not at all.

Terms applied to the caciques

The Winter cacique is called 'cjike, 'ice hard' ('cji, ice; ke, hard). The Summer cacique is called p'c'xtyjc, 'water sitting governor'? (p'c, water; 'x, to sit?; tyjc, chief, governor. The Winter cacique is the tara, 'father,' of the people; the Summer cacique is the jija, 'mother.' Whether the Winter cacique is also called sɛndɛ, 'old man,' and the Summer cacique kwijc, 'old woman,' could not be ascertained. But sɛndɛbi 'ɛ kwijcɛbi 'ɛ 'old man's children and old woman's children,' is an expression heard in council and probably refers to all the people of the village who are considered to be the children of the Winter cacique and Summer cacique.

ti'upa're. In council this term is frequently heard. It means literally 'younger and elder brothers and sisters' and may perhaps refer to the members of a secret society or to the people of the village. Miss Freire-Marreco reports that she has heard the members of a council or general meeting addressed by the speakers as *ti'upa're*.

Officer. No other term than *pa're*, 'elder brother or sister', could be obtained with the general meaning of officer. Assistants to officers are called *k'c*, 'arms.'

Elders and novices in secret societies. It appears that in secret societies the elders are called *pa're*, 'elder brother or sister', and the novices *ti'u*, 'younger brother or sister'.

Member of secret society. A member of any one of the secret societies is called *pat'owâ*, 'fish person'. In the plural *pat'owâ* is applied to members of any one of the secret societies or those of all the secret societies collectively.

Principales. The Spanish word *principal* is applied (1) to the officers of a pueblo, (2) to the men of a pueblo who are or have been governors. The Tewa equivalent for "*principal*" is *pa're*, 'elder brother or sister'.

Monks and nuns. To these the word *pa're*, 'elder brother or sister', is regularly applied. This usage may be regarded as a translation of Spanish *hermanos*, *hermanas*. A novice in a cloister or convent might be called *ti'u*, 'younger brother or sister.'

"Father" as applied to God. Either *tara* or *tatà* renders 'father' as applied to God. Contrary to the usage in some Pueblo languages *tara*, 'father' is not applied to the Sun or Moon, who are both masculine, and to whom *səndc*, 'old man', is applied. The Tewa do not speak of any "Sun-Father".

"Mother" as applied to a divinity. It is known that at least to one female divinity the name *jija*, 'mother,' is applied.

The Holy Virgin. To the Holy Virgin the name *səntà* 'a'a'nu (*səntà*, holy, < Sp. *santa*; 'a'a'nu, sex-age noun denoting a woman of about sixteen years of age) is applied.

Shaman. Shaman is called *wək'əndi'*, 'medicine worker' (*wə*, medicine, magic; *k'ən*, to do; 'i', particle denoting sing., animate gender).

Wizard, witch. Wizard or witch is called *tʃug'i'*.

Roman Catholic priest. Two terms are in use: 'əqwa (corruption of 'aqwa, 'cloth trailer' ('a, cloth, vestment; qwa, to drag, to trail); *padrì* (< Sp. *padre*, father). Rarely *kurà* (< Sp. *cura*) also is used.

Term used in addressing the "abuelo." In addressing the personator of the *tsabijc* or "abuelo" *l'ə*, 'grandfather,' is invariably used.

Slave, captive. A captive or slave taken in war or otherwise is called *pəŋ*, diminutive *pəŋ'ə*. The Spanish terms are *cautivo*, *genizaro*, *esclavo*.

Family. No word meaning 'family' can be discovered.

Parents. The Tewa have no word meaning 'parents.' They must say *tara'a jija'a*, 'father and mother' or *jija'a tara'a*, 'mother and father' (*tara*, father; 'a connective postfix; *jija*, mother, 'a, connective postfix).

In Indo-Germanic languages words meaning 'parents' seem to have the original meanings of either 'those who give birth' (e. g., Latin *parentes*, Russian *rod'imi*), or 'elders' (e. g., German *eltern*).

Orphan. A person who has lost both parents by death is called *tara'pi'i'* *jija'pi'i'*, 'fatherless and motherless' (*tara*, father; *jija*, mother; *pi*, negative; 'i', particle denoting sing., animal gender). For fatherless person *tara'pi'i'*, for motherless person *jija'pi'i'* is used.

Brothers and sisters. German *Geschwister*. If the brothers and sisters referred to are elder than self *pa'are* must be used; if younger than self, *ti'u*. If both elder and younger than self such an expression as *pa'are'a ti'u'a*, 'elder and younger brothers and sisters', must be used.

Person, people. The word *t'cwà* means 'person', 'people', and has several other meanings. See above.

Tribe. There is no word meaning tribe except *t'cwà*, 'people.' Such a circumlocution as *hə'əminda t'cwà ngimɥ*, 'we are a single people' (*hə'əminda*, singly; *t'cwà*, people; *ngi*, we 2+; *mu*, to be) may be used.

Clan. For 'clan' *t'cwà* is also employed. Thus *t'aŋt'cwà*, 'the sun people,' 'the sun clan' (*t'aŋ*, the sun; *t'cwà*, people).

Phratry, clan-group, division. *T'cwà*, 'people,' is also used with this meaning. Thus: *tenuri'iŋ t'cwà*, 'the winter division,' 'the winter people' (*tenuri*, winter; *iŋ*, particle denoting 2+ plu., animal gender; *t'cwà*, people).

Somebody, anybody. As in many other languages expressions denoting 'somebody,' 'anybody' are derived from the numeral 'one' or from the interrogatives. Thus: *nga tɕ'bi tara*, 'somebody's father' (*nga*, as in *ngahpŋ*, I do not know; *tɕ'*, who, interrogative; *bi*, possessive; *tara*, father); *wenabi tara*, 'somebody's father' (*wena*, one; *bi*, possessive; *tara*, father).

Friend. The word meaning 'friend' is *k'emà*. For uses of *k'emà* see above.

Companion. Either *k'emà* or *kɕmpa* (< Sp. *compadre*) seems to be used.

Girl sweetheart. Several expressions are in use, such as *nabi 'a'əŋu* (*nabi*, my; *'a'əŋu*, maiden, virgin); *nabi 'ɛ* (*nabi*, my; *'ɛ*, son, daughter); *nabi hŋŋ* (*nabi*, my; *hŋŋ*, pulse, respiration, life, soul); *nabi hŋŋ'ɛ* (*nabi*, my; *hŋŋ*, pulse, soul; *'ɛ*, diminutive).

Enemy, warrior. The single word *həmbi'* means 'fighter,' 'warrior,' 'private, or public enemy.'

Brave man. The commonest expression with this meaning is perhaps *pŋŋtɕ'i'*, 'brave one,' literally 'heart tough or elastic' (*pŋŋ*, heart; *tɕ*, tough or elastic; *i'*, particle denoting sing., animal gender).

Coward. The common expression meaning coward in war or otherwise is *k'μwenda'a'i'*, which cannot be clearly etymologized.

Ancient, person who lived long ago. The word *hewendi'* means 'person who lived long ago.' It may also mean 'ancestor.'

Ancestor. Either *hewendi'*, which properly means merely 'person who lived long ago,' or such expressions as *nabi l'elebi papa*, 'my grandfather's great grandfather' (*nabi*, my; *l'ele*, grandfather; *bi*, possessive; *papa*, great grandfather).

Descendant. No used term could be obtained unless it be expressions like *nabi l'elebi papa'e*, 'my grandchild's great grandchild', said by male (*nabi*, my; *l'ele*, grandchild of grandfather; *bi*, possessive; *papa'e*, great grandchild of great grandfather).

Giant. There are many legends about giants. They are called *l'cwajc* 'great people' (*l'cw*, person, people; *jc*, augmentative).

Dwarf. Tewa myths make much mention of giants but none of dwarfs, as far as has been learned. There are two expressions:

(a) *scpi'i'* (*sc*, to grow up, to become adult; *pi*, negative; *i'*, particle denoting sing., animate gender);

(b) *mbeg'i'* (*mbegi*, small and roundish; *i'*, particle denoting sing., animate gender).

Monster, deformed new-born child. There are only expressions such as *l'xki winamp'i*, 'it is not entire' (*l'xki*, entire, whole, perfect; *wi*, negative; *ng*, it; *mp*, to be; *pi*, negative).

Hermaphrodite. Of an hermaphrodite might be said: *kwi'a s'enda ngmp*, 'it is woman and man' (*kwi*, woman in prime; *a*, connective postfix; *sen*, man in prime; *a*, connective postfix; *ng*, it; *mp*, to be).

Name. Any kind of a name or noun is called *k'cηwε*.

Person who has the same given name as another. Miss Freire-Marreco gives the information that Santiago Naranjo of Santa Clara called Santiago Cantana of Cochiti his "*tekuje*". This word is said by her to be applied to a person who has the same given or Christian name as another.

Dead person. A dead person is called *t'u'i'*, 'dead'. No milder term like 'blessed', 'departed', and the like could be discovered.

The presentation of Tewa relationship words given above is, because of lack of time, not what the writer would have liked to make it. The relationship terms of a number of Indian languages of southwestern United States have been completely recorded and for purposes of comparison should be presented together.

SCHOOL OF AMERICAN ARCHEOLOGY
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THE ALLENTIACAN, BOROROAN, AND CALCHAQUIAN LINGUISTIC STOCKS OF SOUTH AMERICA

By ALEXANDER F. CHAMBERLAIN

I. ALLENTIACAN

AT the time of the Spanish conquest, the *Allentiacs*, or Huarpes (Guarpes), inhabited the plains about the great lagoons of Huanacache, extending probably to the western slopes of the Sierra de Córdoba and southward to the northern parts of San Luis and Mendoza. According to Boman (*postea*, p. 35), they were a savage people, unrelated to the tribes of the Andean valleys. Brinton¹ affined the Allentiac with the Millcayac, making them both Aucan (i. e., Araucanian) dialects. Mitre's critical study of Valdivia's grammar and vocabulary of Allentiac, however, seems to make certain the lexical and grammatical independence of this tongue, and to justify the recognition of an *Allentiacan* stock. The Millcayac was probably Puelchean. Boman (p. 36), without sufficient proof, sees in the Huarpes "the last remains of a people, who, much earlier, occupied vast regions of southern South America." The Allentiac and the Millcayac were the chief languages spoken in the old provinces of Mendoza, San Juan, and San Luis. The *Allentiac* was extinct in the 18th century. The principal literature concerning the *Allentiacan* linguistic stock will be found in the following titles:

1. AGUIAR (D. S.). *Los Huarpes*. Buenos Aires, 1900; 2ª parte, Buenos Aires, 1904.
2. BOMAN (E.). *Antiquités de la Région Andine de la République Argentine et du Désert d'Atacama*, t. 1, Paris, 1908. See pp. 35-57.
3. DE LA GRASSERIE (R.). *De la langue Allentiak*. *Journ. de la Soc. d. Amér.*, de Paris, 1^{re} s., t. III, 1900, pp. 43 ff.
4. MEDINA (J. T.). See DE VALDIVIA (L.).
5. MITRE (B.). *Lenguas Americanas. Estudio bibliográfico-lingüístico de las Obras del P. Luis de Valdivia, sobre el Araucano y el Allentiak, con un vocabulario razonado del Allentiak*. La Plata, 1894, pp. 152.

¹ *American Race*, p. 323.

6. MITRE (B.). Catálogo razonado de la Sección Lenguas Americanas. Con una Introducción de Luis María Torres. Tomo I, Buenos Aires, 1909, pp. xliii, 411.
7. DE VALDIVIA (L.). Doctrina Cristiana y Catecismo, con un Confesionario, Arte, y Vocabulario de la lengua Allentiac, por el padre Luis de Valdivia de la Compañía de Jesús. Reimpreso todo á plana y renglon, con una reseña de la vida y obras del autor, por José Toribio Medina. Sevilla, 1894. Reprint of first edition published at Lima in 1607.
8. —. Doctrina Christiana y Cathecismo en la lengua Allentiac que corre en la ciudad de S. Juan de la Frontera, con un Confesionario, Arte y Vocabulario breves. . . . Lima, 1607, pp. 47.
9. —. Arte gramática, vocabulario, catecismo y confesionario en lengua Chilena, y en las lenguas Allentiac y Milcucayac, que son las mas generales de la Provincia de Cuio en el Reino de Chile, y que hablan los Indios Guárpes y otros. . . . Lima, 1908.

The work of Father de Valdivia, the basis of research in the *Allentiacan* language, gives "the Christian doctrine and Catechism in the speech of the Allentiacs of the city of San Juan de la Frontera, with a Confessionary, Grammar, and brief Vocabulary." This linguistic material has been discussed by de la Grasserie and Mitre, the former, in 1894, determining the *Allentiac* to be an independent stock. In 1909, Mitre¹ treats of the *Allentiac* in detail, summarizing (pp. 342-360) the data in de Valdivia as to grammar and morphology, and giving also (pp. 361-409) a vocabulary of Allentiac-Spanish, with etymologies and grammatical analyses where known.

The family name *Allentiacan* comes from *Allentiac* (*Allentiak*), the appellation of the language spoken by the people known likewise by this same term, as well as by the name of *Huarpes*, or *Guarpes*. Both these terms may be of non-Allentiacan origin. Boman (p. 36) suggests a derivation of *Allentiac* from Tehuelche (Tsonekan) *allen*, man, people, and thinks that *Huarpe* may be Aymaran,—but this is conjecture. Mitre,² who makes out *Huarpe* to be Aymaran, follows de Valdivia in the Tsonekan etymology adopted by Boman. The derivation of de Valdivia is not at all satisfactory. Boman also divides *Allentiac* into *Allen-tiak*, and suggests that the Hispanified *Diag-nita* may be cognate. This, again, lacks proof.

¹ *Catálogo*, pp. 339-409.

² *Ibid.*, pp. 346, 347.

II. BOROROAN

The territory of the *Bororoan* stock lies in central Matto Grosso, Brazil. Frič (1906) thus delimits it:

"The Bororó inhabit the entire course of the São Lourenço river as far as its union with the Cuyabá, where they come into contact with the Guató. The northern boundary is formed by the north bank of the Rio das Mortes, the south bank being inhabited by the Cayapós, with whom the Bororó have long waged war. Farther north they occupy both banks of the Araguaya right across the road that leads from Cuyabá to Goyaz."

In the first half of the eighteenth century these Indians roved about the region of the Xingú-Araguaya watershed in central Matto Grosso. Later on, the so-called "Bororó Cabações" settled on the upper Paraguay. The others were for a long time known as "Coroados," and, as Ehrenreich notes, it was only in 1888, as a result of the visit of the second German Xingú expedition, that "the identity of these Indians with the genuine old Bororó was established." Their center was "between the sources of the S. Lourenço and the Cayapó Grande, the principal source of the Araguaya." At the time of von den Steinen's visit there were several hundred Bororó, settled under military supervision, at the colony of Theresa Christina on the São Lourenço. Many Bororó are in the service of the citizens of Cuyabá, and elsewhere. The Matto Grosso Bororó are distinguished as "Bororó da Campanha" (i. e., Bororó of the Plains) and "Bororó Cabações" (i. e., Bororó of the river Cabaçal). Von den Steinen in 1894 described the former as "living in small settlements below Villa Maria on the right bank of the Paraguay and Jauru over toward Bolivia," while the latter "live not far from these northward on the banks and headwaters of the Cabaçal and the Jauru, both which rivers flow into the Paraguay from the right, the one at Villa Maria, the other somewhat farther south." The Bororó are termed by von den Steinen "the ruins of a once powerful people, who possessed the country between the Paraguay and the Cuyabá." The Bororó of the São Lourenço are still known as "Coroados." In 1848 the "Bororó da Campanha" were reported as numbering about 180, and the "Bororó Cabações" about 110; and by 1872 the latter had decreased to some 40, while the former were about the same.

6. MITRE (B.). Catálogo razonado de la Sección Lenguas Americanas. Con una Introducción de Luis María Torres. Tomo I, Buenos Aires, 1909, pp. xliii, 411.
7. DE VALDIVIA (L.). Doctrina Cristiana y Catecismo, con un Confesionario, Arte, y Vocabulario de la lengua Allentiac, por el padre Luis de Valdivia de la Compañía de Jesus. Reimpreso todo à plana y renglon, con una reseña de la vida y obras del autor, por José Toribio Medina. Sevilla, 1894. Reprint of first edition published at Lima in 1607.
8. —. Doctrina Christiana y Catecismo en la lengua Allentiac que corre en la ciudad de S. Juan de la Frontera, con un Confesionario, Arte y Vocabulario breves. . . . Lima, 1607, pp. 47.
9. —. Arte gramática, vocabulario, catecismo y confesionario en lengua Chilena, y en las lenguas Allentiac y Milcucayac, que son las mas generales de la Provincia de Cuzco en el Reino de Chile, y que hablan los Indios Guarpes y otros. . . . Lima, 1908.

The work of Father de Valdivia, the basis of research in the *Allentiacan* language, gives "the Christian doctrine and Catechism in the speech of the Allentiacs of the city of San Juan de la Frontera, with a Confessionary, Grammar, and brief Vocabulary." This linguistic material has been discussed by de la Grasserie and Mitre, the former, in 1894, determining the *Allentiac* to be an independent stock. In 1909, Mitre¹ treats of the *Allentiac* in detail, summarizing (pp. 342-360) the data in de Valdivia as to grammar and morphology, and giving also (pp. 361-409) a vocabulary of Allentiac-Spanish, with etymologies and grammatical analyses where known.

The family name *Allentiacan* comes from *Allentiac* (*Allentiak*), the appellation of the language spoken by the people known likewise by this same term, as well as by the name of *Huarpes*, or *Guarpes*. Both these terms may be of non-Allentiacan origin. Boman (p. 36) suggests a derivation of *Allentiac* from Tehuelche (Tsonekan) *allen*, man, people, and thinks that *Huarpe* may be Aymaran,—but this is conjecture. Mitre,² who makes out *Huarpe* to be Aymaran, follows de Valdivia in the Tsonekan etymology adopted by Boman. The derivation of de Valdivia is not at all satisfactory. Boman also divides *Allentiac* into *Allen-tiak*, and suggests that the Hispanified *Diag-uita* may be cognate. This, again, lacks proof.

¹ *Catálogo*, pp. 339-409.

² *Ibid.*, pp. 346, 347.

II. BOROROAN

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In the first half of the eighteenth century these Indians roved about the region of the Xingú-Araguaya watershed in central Matto Grosso. Later on, the so-called "Bororó Cabações" settled on the upper Paraguay. The others were for a long time known as "Coroados," and, as Ehrenreich notes, it was only in 1888, as a result of the visit of the second German Xingú expedition, that "the identity of these Indians with the genuine old Bororó was established." Their center was "between the sources of the S. Lourenço and the Cayapó Grande, the principal source of the Araguaya." At the time of von den Steinen's visit there were several hundred Bororó, settled under military supervision, at the colony of Theresa Christina on the São Lourenço. Many Bororó are in the service of the citizens of Cuyabá, and elsewhere. The Matto Grosso Bororó are distinguished as "Bororó da Campanha" (i. e., Bororó of the Plains) and "Bororó Cabações (i. e., Bororó of the river Cabaçal). Von den Steinen in 1894 described the former as "living in small settlements below Villa Maria on the right bank of the Paraguay and Jauru over toward Bolivia," while the latter "live not far from these northward on the banks and headwaters of the Cabaçal and the Jauru, both which rivers flow into the Paraguay from the right, the one at Villa Maria, the other somewhat farther south." The Bororó are termed by von den Steinen "the ruins of a once powerful people, who possessed the country between the Paraguay and the Cuyabá." The Bororó of the São Lourenço are still known as "Coroados." In 1848 the "Bororó da Campanha" were reported as numbering about 180, and the "Bororó Cabações" about 110; and by 1872 the latter had decreased to some 40, while the former were about the same.

(The corresponding numbers for the "Coroados" were not given.) Conflicts with the whites (1875-1880, and since) have further seriously reduced the number of these Indians.

In 1891, Brinton¹ classed the Bororós simply as a tribe of the Tupian stock, although the independent character of their language had been noted by von den Steinen some years before. In 1892, de la Viñaza, in his bibliographical monograph (p. 341) stated that "la lengua Bororó es de origen desconocido." In 1894, von den Steinen, in his work on the aborigines of central Brazil (p. 517), expressly stated that the language of the Bororó is unrelated to any other.

The chief literature concerning the *Bororoan* linguistic stock will be found in the following titles:

1. BOGGIANI (G.). *Etnografía del Alto Paraguay*. Bol. Inst. Geogr. Argent. (B. Aires), 1898, vol. XVIII, pp. 613-626, map.
2. —. Vocabulario. MS. Printed in the article of Frič and Radin (q. v.).
3. CALDAS (—). Vocabulario do lingua indigena dos Bororós Coroados. Cuyahá, 1899.
4. CARDÚS (J.). *Las Misiones Franciscanas entre los Indios de Bolivia*, etc. Barcelona, 1886, pp. 425.
5. DE CASTELNAU (F.). *Voyage dans les parties centrales de l'Amérique du Sud*, . . . Histoire du voyage. 6 vols. Paris, 1850-51. See vol. v.
6. EBRENREICH (P.). *Anthropologische Studien über die Urbewohner Brasiliens*. Braunschweig, 1897, pp. iv, 168.
7. FRIČ (V.) and RADIN (F.). Contributions to the Study of the Bororo Indians. *Journ. Anthrop. Inst. (Lond.)*, vol. XXXVI, 1906, pp. 393-406.
8. KOSLOWSKY (J.). Algunos datos sobre los indios Bororós. *Rev. d. Mus. de La Plata*, tomo VI, 1895, pp. 373-410.
9. —. Tres semanas entre los indios Guató. *Ibid.*, tomo VI, 1895, pp. 221-250.
10. MELGAÇO (Barão). See VON DEN STEINEN (K.).
11. VON MARTIUS (C. F. P.). *Beiträge zur Ethnographie und Sprachkunde Amerika's zumal Brasiliens*, 2 Bde., Leipzig, 1867. Bd. II: *Wörter-sammlung brasilianischer Sprachen*, pp. xxi, 548.
12. MEYER (H.). *Bogen und Pfeil in Central-Brasilien*. Leipzig, 1896. Translated: *Bows and Arrows in Central Brazil*, in *Rep. Smithson. Inst.*, Washington, 1896.
13. MONTINHO (J. F.). *Notícia sobre a provincia de Matto Grosso*. S. Paulo, 1869.

¹ *American Race*, p. 23.

14. VON DEN STEINEN (K.). *Durch Central-Brasilien*. Leipzig, 1886, pp. xli, 372.
 15. ——. *Unter den Naturvölkern Zentral-Brasiliens*. Berlin, 1894, pp. xiv, 570.

Montinho (pp. 170-171) gives some words of the "Bororós-Cabaças," and also a vocabulary of 32 words (pp. 192-194) of the "Coroados," but these latter belong not to the Bororó thus named, having been, as von den Steinen points out, taken from von Martius' work. They are really "Coroado of the Rio Xipoto," and altogether non-Bororó. The identity of the Matto Grosso "Coroados" with the Bororó was suspected by Melgaço and Cazal before von den Steinen's demonstration of it. Boggiani's vocabulary in Frič and Radin contains about 150 words, of which some are not to be found in Caldas or von den Steinen. In his work on *The Aborigines of Central Brazil* (pp. 441-518) von den Steinen furnishes an excellent ethnological sketch of the Bororó. Besides the few grammatical notes there given (p. 17), he also prints a German-Bororó vocabulary of some 300 words. Brief vocabularies are given in von Martius¹ and in Cardús, the former taken from de Castelnau.²

The family name, *Bororoan*, is derived from *Bororó* (Bororós), the term by which these Indians have long been known. Its etymology is uncertain.

III. CALCHAQUIAN

The character of the *Calchaquian* language and the extent of the territory occupied by those who once spoke it have been the subject of much discussion and even disputation. In 1891, Brinton (*Amer. Race*, pp. 319-320) recognized a "Catamareña" stock, to which he assigned the following tribes—*Acalianes*, *Cacas* (or *Cacanas*), *Calchaquis*, *Catamarcas*, *Diagítas* (or *Diachitas*), *Quilmes*, *Tamanos*. He identified the *Calchaquian* language with the *Catamareño* or *Cacana* tongue, a grammar of which was written by de Barcena, but suggested that further research might show that the Calchaquis "were a branch of the Araucanians." The *Calchaquian* culture, he thought, had been inspired by the Peruvian. Later,³

¹ Vol. II, pp. 14-15.

² Vol. V, p. 285.

³ *Stud. in S. Amer. Nat. Langs.*, 1892, pp. 52-58.

he looked upon the *Calchaquis* as "a more or less mixed branch of the Kechua family," abandoning his former recognition of the language as an independent stock. This "identification of the *Calchaqui* dialect of Tucuman with a patois of the Kechua," is based by him partly on the fact that the Abbé Camaño speaks of a "*Calchaqui* or *Tucumano* or *Catamareño* dialect of Quechua." But it is admitted that the people of the *Calchaqui* country had abandoned their mother tongue (if they had one) for Quechua before the time of Camaño, so his evidence is hardly convincing. Von Tschudi's attempt to connect the *Calchaquian* language with Atacameñan, Ameghino's claim of Aymaran relationship, Lafone-Quevedo's view that it was a mixed or mongrel tongue (Kechuan-Abiponian-Guarani), etc., are all without sufficient proof. H. von Ihering holds to the theory of an independent stock as Brinton did formerly.

The importance of the ancient *Calchaquian* culture has recently been emphasized by Ambrosetti, Boman, and other investigators. Ambrosetti (1902, 1903) believes the territory of the *Calchaquian* independent stock to have included a good deal of the Argentine provinces of Jujuy, Salta, Tucuman, and Catamarca, with extensions farther south in La Rioja and San Juan, even to the borders of Mendoza. He thinks that the Inca element in *Calchaquian* culture has been exaggerated, and the native factor underestimated. He has also made out an interesting comparison between the *Calchaquian* culture and that of the Pueblo Indians of New Mexico and Arizona, but this does not necessarily imply any close racial or linguistic relationship of these two peoples—it merely emphasizes the effects of very similar natural environments upon the development of human civilization.

Léjeal and Boman (1906), in their discussion of the "*Calchaqui* question," identify *Calchaqui* culture with Diaguitan culture, holding that "the *Calchaquis* were not themselves a distinct nation, but belonged to the more important Diaguitan people, whose territory extended over all the Andine region of northern Argentina, from the peak of Acay and the valley of Lerma, on the north, to the province of San Juan on the south (the Sierra de Córdoba

excepted).¹ While recognizing the Peruvian element in Diaguitan culture, and that a very large one, these authors (p. 186) allow a considerable factor of independent origin. Later, Boman² discusses in detail the Diaguitas and their culture. He attributes to them, at the time of the Spanish conquest, all the mountainous region of modern Argentina, from the Nevado of Acay and the valley of Lerma, on the north, probably to the province of Mendoza, on the south; in this region must, however, be excepted the Sierra de Córdoba, inhabited by the Comechingones, whose culture, like that of the Diaguitas, seems to have had affinities with the Andine type, but who did not speak Cacan, the general language of the Diaguitas" (p. 12). Also, "the Diaguitas constituted an ethnic unity, not only from the point of view of their culture, but likewise linguistically; they all spoke a common language, the Cacan, Caca, or Kakan" (p. 16). Boman's map shows the extent of the *Calchaquian* or Diaguitan territory as above described.

In his later discussion of the subject Brinton³ states that the *Calchaqui* or *Cacana* language "was merely a corrupt dialect of the widely extended Quechua stock," but admits that "it is possible that at the conquest some relics of an earlier tongue remained." Ehrenreich (1905) inclined to the opinion that the *Calchaquis* were a mixed people, as Lafone-Quevedo maintained. Taking all things into consideration, however, there still seems reason to believe in the independent character linguistically of the people in question, and they are here ranked as such—the *Calchaquian* linguistic stock, that term being preferred over *Catamareñan*, *Cacan*, *Cacanan*, or *Diagnitan*. At its greatest extent, the *Calchaquian* stock may be said to have occupied a territory of varying breadth, between about 23° 30' and 32° 30' S. lat. The *Calchaquian* language was still spoken in the seventeenth century; and Boman (p. 20) observes: "Lozano informs us that the Jesuit Hernando de Torreblanca was, in 1657, the only Spaniard who knew the language of the *Calchaquis*." Outes and Bruch (pp. 48-65) recognize the independent character of the *Caca* tongue, but reject the term *Calchaqui* as improperly applied to the Diaguitas.

¹ *Antig. d. Rég. And.*, t. 1, 1908, pp. 12-32, etc.

² *Ling. Cartog. Chaco Reg.*, 1898, p. 27.

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1. AMBROSETTI (J. B.). La civilisation Calchaqui. Congr. Intern. d. Amér., XIIe sess. (Paris, 1900), 1902, pp. 293-297.
2. —. Ressemblance entre les civilisations Pueblo et Calchaqui. Ibid., XIIIe sess. (N. Y., 1902), 1906, pp. 9-15.
3. —. Antiquedades Calchaques, Buenos Aires, 1902, pp. 97, repr. from vols. LIII and LIV of *Anales de la Sociedad Científica Argentina*.
4. —. I Calchaqui, Roma, 1903, pp. 18, repr. from the *Bollettino della Società Geografica Italiana*.
5. DE BARZANA (A.). The existence of works attributed to this writer is doubted by Boman (pp. 17-20), but Brinton (*Amer. Race*, p. 320) says a grammar of *Cacana* was written and perhaps published by him.
6. BOGGIANI (C.). Cartografía lingüística del Chaco, por el Dr Brinton. *Rev. del Inst. Parag. (Asunción)*, 1899, pp. 106-137.
7. BOMAN (E.). Antiquités de la Région Andine de la République Argentine et du Désert d'Atacama. Tome I, Paris, 1908, pp. xi, 388. See pp. 12-32 on *Diaguitas*.
8. BRINTON (D. G.). The American Race. New York, 1891, pp. xvi, 392.
9. —. Studies in the Native Languages of South America. Philadelphia, 1892, pp. 67.
10. —. The Linguistic Cartography of the Chaco Region. Philadelphia, 1898, pp. 30.
11. CAMAÑO (ABBÉ). Elementi della lingua Quichua. Ms. (18th cent.). Cited by Brinton (*Studies*, p. 52).
12. LAPONE-QUEVEDO (S. A.). Tesoro de Catamarqueñismos: Nombres de lugar y apellidos indios con etimologías y eslabones aislados de la lengua *Cacana*. Buenos Aires, 1898, pp. xlv, 377. Also in *Anales de la Sociedad Científica Argentina*, vols. XXXIX-XLI, 1895-1898.
13. LÉJEAL (L.) et BOMAN (E.). La question Calchaque. Congr. Intern. d. Amér., XVe sess. (Québec, 1906), 1907, pp. 179-186.
14. LOZANO (P.). Historia de la conquista del Paraguay, Rio de La Plata, Tucuman (1745). Edición Lamas. Buenos Aires, 1873-1875.
15. MORENO (F. P.). Exploración arqueológica de la provincia de Catamarca. *Rev. del Mus. de La Plata (La Plata)*, vol. 1, 1891, pp. 199-216.
16. MOSSI (M. A.). Gramática razonada de la lengua Quichua, comparada con las lenguas del antiguo continente; con notas especiales sobre la que se habla en Santiago del Estero y Catamarca. Córdoba, 1889.
17. NARVAEZ (P. S.). Relación de las provincias de Tucuman (1583?). Madrid, 1885.
18. OUTES (F. F.) y BRUCH (C.). Los Aborígenes de la República Argentina. Buenos Aires, 1910, pp. 149.
19. QUESADA (V. G.). Apuntes sobre el Origen de la lengua Quechua en Santiago del Estero. In his *Estudios Históricos* (Buenos Aires, 1863).

20. QUIROGA (A.). Antigüedades calchaquíes. Bol. del Inst. Geogr. Argent. (B. Aires), vol. XVII, 1896, pp. 177 ff.
21. —. Folk-lore Calchaquí. Ibid., vol. XVIII, 1897, pp. 48 ff.
22. SOFRANO (P. P.). Historia de las Guerras con los terribles Calchaquíes, Chiriguano, y los Quilmes. Completa conquista del antiguo Tucuman. Buenos Aires, 1896.
23. DEL TECHO (N.). Historia Provinciar Paraguariar . . . Leodii, 1673.

Whatever vocabularies, texts, etc., in the *Calchaquian* language may have been collected by the old missionaries, they are now lost or inaccessible, lying, perhaps, in unknown locations. The linguistic data remaining consist of place-names, etc., and these are discussed by Lafone-Quevedo, in his *Tesoro de Catamaqueñismos*, but not to the satisfaction of Brinton (*Ling. Cart.*, p. 26), who cites from him some of these words and terminations. Brinton cites a *Grammar of Calchaquí* as having been written (and published?) by the Jesuit missionary Alonso de Barcena (or Barzana), and other authorities cite a *Vocabulary* as well; but Boman (pp. 17-20) finds no such works in existence; careful investigation, e. g., showing that the *Vocabulario* stated by Graesse to be in Paris does not exist there at all (this was said to have been printed at Los Reyes in 1586). The *Lexicon et præcepta grammatica*, for which a date, "Peruviae, 1590," is assigned by several bibliographers; is, according to Boman, a "made-up" title.

The family name, *Calchaquian*, comes from *Calchaquí*, the appellation of the most celebrated member of the stock, best known through its stubborn resistance to the conquering Spaniards. Its etymology is unknown. The language seems to have been called *Caca*, *Cacana*, etc.

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AN ANCIENT NEW JERSEY INDIAN JARGON

By J. DYNELEY PRINCE

INTRODUCTION

WHILE at Trenton as Acting Governor of New Jersey in 1912, the writer found in the vaults of the Department of State an old manuscript volume of deeds, pertaining to Salem county, N. J.¹ In this collection, inserted next to a deed bearing the date 1684, is "the Indian Interpreter," a list of 261 words and phrases in the English of the period and in a mixed dialect of the New Jersey Delaware language, the arrangement being at random with no attempt at alphabetical order. The material given in this list was published without comment in Lossing's *Historical Record* (vol. 1, 1872, pp. 308-311), but so faultily, with so many misunderstandings of the original orthography, and with such a quantity of typographical errors, that the reproduction is of no service whatever to students of the Lenâpe. The writing in the manuscript is somewhat difficult to read for one accustomed only to modern script. Thus, there are many ambiguous characters, such as the similar capitals S-L and R-K, and the almost identically written *minuscule* n-r-v-s; l-h, etc., so that a person entirely unacquainted with Lenâpe could hardly hope to make even an approximately correct transcription of the Indian words.

The list is of considerable philological interest, first, because it undoubtedly represents a Traders' Jargon, used between the Delaware River whites and the Indians, almost grammarless and based chiefly on English construction, like the Chinook and Eskimo traders' idioms of the North; and secondly, because the Delaware material, broken and erroneous as it often is, is not entirely Minsi.

There can be no doubt that we have here Unami and Unalachtigo elements as well as Minsi. The following instances should be

¹ Salem Surveys, No. 2; stiff paper, yellow with age, in original leather binding.

compared: *nahaunum* 'raccoon' (below nr. 76); *miningus* 'mink' (80); *copy* 'horse' (83); *s* for *sch* in *singkoatam* (97); *s* for *tsch* in *singa* 'when' (110; 114); *r* for *l* in *ruti* 'good' (125); *raamunga* 'within' (135); *thenus* for *leno* 'man' (227-228); *roanongheen* 'northwest wind' (180), none of which words or peculiarities is of northern origin.¹

Strangely enough, Brinton, in his *Lenâpé and their Legends*, makes no mention of this manuscript material in the Salem Records, although he knew of and commented briefly on the Traders' Jargon.² The jargon of the Salem Records and that given by Thomas³ are identical, save that the former source is much fuller than the few specimens cited by Thomas.

The jargon words given by Thomas, which are not found in or are noticeably variant from the language of the Salem Records, are comparatively few and are as follows:³

apeechi 'quickly' = SR. *v' hapitcha* (117).

aroosise 'old' = Z. *mihilâsis* 'old man', from stem = 'decay'.

henoin(g)id 'boys'; not a plural = Del. *pitwin* 'young (pit) one' (*win*) + the dim. *v' -til*. Note the interchange of *l* and *n*, Unalachtigo fashion.

beto 'fetch' = SR. *petto* (110).

chekenip 'turkey'; Unalachtigo form (Brinton, "Lenâpé", p. 37) = SR. *sickenom* (21).

chase 'skin' = SR. *hayes* (70). Palatalization of Del. *ches*. See below s. v. *kachi*.

chelena 'strong' = Z. *tschillanne* 'hard'; *nischitannessi* 'I am strong'.

enychan 'children'; not a plural = Z. *nitschaan* 'my child'; Aben. and Pass. *nijan*.

¹ Cf. J. D. Prince, The Modern Minni Delaware Dialect, *Amer. Jour. of Philol.*, xxi, pp. 295-302.

² Op cit., pp. 75 ff., as instanced by Gabriel Thomas in his *History and Geography; Account of the Province and Country of Pennsylvania and West New Jersey in America*. London, 1698, a still accessible reprint of which appeared in New York in 1848.

³ The following abbreviations have been used throughout this paper: B. = Brinton, *Lenâpé-English Dictionary*, Philadelphia, 1888; Z. = Zeisberger's *Indian Dictionary*, printed from the original manuscript, Cambridge, 1887; Pass. = Paesamaquoddy; Aben. = Abenaki; A. = Albert Sequakind Anthony, collaborator with Brinton in his *Lenâpé-English Dictionary*; RW. = Roger Williams; SR. = Salem Records; OA. = Old Abenaki; P. = Prince. It should be noted that the phonetic system followed by the writer of the Salem Record is that of the English of the seventeenth century. Both Brinton and Zeisberger followed the German method of notation, with certain irregularities on the part of Brinton.

etka 'or' = *etek* 'where it may be'; used like the Germ. *sei*; Fr. *solt* for 'or'.

haloons 'shot' = SR. *alluns* (48).

hayly 'very' = B. *cheli* 'much'.

hila 'friend'; cf. SR. 58.

hodi 'farewell' = Eng. 'howdy'.

kabay 'horse' = SR. *copy* (58).

kachi 'how many' = Z. *kechi*; B. *kechi*. This guttural must have been pronounced with a strong palatalization to be represented by Eng. *ch*. Cf. below, *marchkec*.

koon 'winter' = SR. *coon* (16).

marchkec 'red' = Z. *mechksitschik* 'red ones'.

megis 'sheep' = SR. *mekis* (87).

mogy 'yes' = SR. *mochee* (98). Note the use of *g* in Eng. for the palatal sound.

moos 'cow' = SR. *muse* (85).

(*kec*) *namen* 'you see' = Z. *nemen*; common Algonquian stem.

neshee 'blue, black'; B. *nescalenk* or *nesgessit lenâpe* 'black men'.

nowa = Aben. *nawa*, a resumptive particle like Eng. 'now' at the beginning of a phrase.

ochquon 'coat' = SR. *aguewan* (40). Was this palatal *ch* or a guttural? Most probably the latter owing to Dutch influence (?) on the notation.

opeg 'white' = SR. *speck* (41).

peo 'he will come' = SR. *payo* (133); *poh* (134).

squatid 'girls'. Not a plural; *squa(w)*, on which see SR. 234 + dim. *-tit*.

tongtid 'young' = Z. *tangeto* 'little'; B. *tangiti* + dim. *v* *-tit*.

(*nee*) *weekin* 'I live, dwell' = Z. *wik* 'house'; common Algonquian *weesyouse* 'meat' = SR. *twse* (81).

Perhaps the most interesting phonetic feature of this jargon, of which the present paper gives all that is now extant, is the interchange of *r* and *l*. It will be observed that the writer of the Salem manuscript gives *rhenus* and *leno* for 'man' (227-228); *ruli* and *olet* for 'good' (123; 125), showing that, even as early as 1684, the whites could hardly distinguish between the Indian *r* and *l*. The *r* was no doubt similar to the old Aben. *r* of Rasles' Dictionary, which is now everywhere represented by *l*, and also to the Iroquois *r* which is at present beginning to become *l* on the St Regis reservation in northern New York; i. e., the old Delaware *r* was a thick palatal which permitted a ready permutation to both *l* and *n*, as was the case in Unalachtigo (Brinton, *Lenâpe*, p. 38, and see just above s. v. *benoin(g)tid*). It should be observed, in studying the following comparisons, that both Brinton and Zeisberger used the German system of notation in writing the Lenâpe.

THE INDIAN INTERPRETER

1. *cutte* 'one'; B. *ngutti*; Z. *gutti*. The *n* is inherent; cf. Pass. *neqt* 'one'.
2. *nisha* 'two'; B. *nischa*; Z. *nischi*.
3. *necca* 'three'; B., Z. *nacha*.
4. *neuwa* 'four'; B., Z. *newo*.
5. *palenah* 'five'; B. *palenach*; Z. *palénachk*.
6. *cuttas* 'six'; B. *guttasch*; Z. *guttaasch*.
7. *neshas* 'seavon'; B. *nischasch*; Z. *nischásch*. The *-asch*-element corresponds to the *-ôz* of the Aben. in *nguedôz* 'six'; *tôbatôz* 'seven'. It must have denoted 'five', as *guttasch-nguedôz* 'six' = 'one', plus *-asch-ôz*; i. e., the first element is *gut-ngued* = Pass. *neqt* 'one'; while *nischasch-tôbatôz* 'seven' = *nisch* and Aben. *tôba*, Pass. *taba* 'two', + *-asch-ôz*; viz., 'one and five, two and five', etc.
8. *haas* 'eight'; B., Z. *chaasch*.
9. *pescunk* 'nine'; B. *peschgonk*; Z. *peschgunk*.
10. *tellen* 'ten'; B., Z. *metellen*.
11. *tellen oak cutte* 'eleven' = 'ten and (oak) one'; Z. *attach gutti*; i. e., *attach* = 'more'; it denotes *-teen*. Cf. nr. 183.
12. *tellen oak nishah* 'twelve'; Z. *tellet woak nische*; *attach nische*.
13. *tellen oak necca* 'thirteen'; Z. *tellet woak nacha*; *attach nacha*.
14. *tellen oak neuwa* 'fourteen'; Z. *attach newo*.
15. *tellen oak pallenah* 'fifteen'; Z. *attach palénach*.
16. *tellen oak cuttas* 'sixteen'; not given by Z.
17. *tellen oak neshas* 'seventeen'; not given by Z.
18. *tellen oak haas* 'eighteen'; Z. *attach chaasch*.
19. *tellen oak pescunk* 'nineteen'; Z. *attach peschgunk*.
20. *nissinach* 'twenty'; Z. *nischinachke*.
21. *sickenom* 'turkey'; B., Z. *tschikenum* (A. "archaic").
22. *kahake* 'goose'; B., Z. *kaak* 'wild g.' (A. *kaág*).
23. *quing quing* 'duck'; B. *quiquingus*. Onom.
24. *nechaleekas* 'hen'; seems onom. The nearest equivalent is B. *quekolis*; A. *wékolis* 'whip-poor-will'. Mod. Del. *kikipisch*; Z. *gigibis*; probably a reduplication of the Dutch *kip(pen)* 'chicken(s)'.
25. *copohan* 'sturgeon'; RW. *kuuposh*; Aben. *kabasa*; connected with Z. *copachcan* 'thick, stiff'. Note OA. *kabasse* 'closed in'; same stem as Del. *kpskhi* 'close'; see below nr. 138.
26. *hamo* 'shad'; I cannot place; B., Z. *schawandimneh*.

72. *hwissameek* 'catfish'; B. *wisamek* (A. = 'fat fish'; archaic; at present *wahlhen* 'mud-fish'); Z. *wisameek*.
28. *schacameek* 'eele'; B. *schachamek*; Z. *schachameek* (lit. 'it is a straight one').
29. *cakickan* 'pearch'; I cannot place. Perhaps should be read *cakielaw*, same stem as B. *machkaligus*; Z. *moechkaligus* 'sun-fish'(?).
30. *lamiss* 'fish'; B. *names*; Z. *namees*.
31. *wenko* 'suet, tallow'; B. *wikul* 'fat in animal's belly'; Z. *wikull*.
32. *pomee* 'grease, fat'; B. *pomik*; Z. *pomi*.
33. *kee maukulome* 'wilt thou buy'? Z. *mahallammen*; B. *mehallamen* 'buy'. Cf. nr. 99.
34. *kecko kee wingenum* 'what wilt thou have'? *kecko* = Z. *kōcu*; B. *kolku* 'what, something'. The root *wing-* appears in B. *winginamen* 'delight in'; Z. *wingilendam*; Aben. *n'wigiba-losa* 'I should like to go', etc.
35. *kech soe keckoe kee wingenum* 'say what hast thou a mind to'. The *-soe* is clearly identified with the indefinite Pass. *-us* in *ke'kws* 'what, anything'.
36. *ne wingenum* 'I have a mind to'.
37. *kake* 'wampum'; Z. *gequak*; B. *gock*, but A. (Mod. Del.) *keeky*.
38. *sowan* 'wampum'; perhaps Z. *schejeek*; B. *schejek* 'string of w.' (A. 'edge, borer').
39. *alloquepeper* 'cap, hat'; B., Z. *alloquepi*.
40. *aquewan* 'coate, cloak or wollen cloak'; B. *achquiwanis* 'blanket'; Z. *achquiwanes*.
41. *wepeckaquewan* 'a white match-coat'; the element *wepeck* 'white' = B. *woapsu* 'white'; Z. *woapsu*. "Matchcoat" meant 'leather coat'; Z. *machtschi-lokees* = 'leather string'.
42. *himbizz* 'cloath, linnen'; cf. Z. *hembsigawan* 'tent'; lit. 'a cloth dwelling'; or 'where one dwells in cloth' (*wig* 'dwell').
43. *sackutackan* 'breeches'; Z. *sackutdikan*; B. *chessachgutackan* 'leather br.'.
44. *cockoon* 'stokings'; B., Z. *gagun*.
45. *seppock* 'shoes'; root appears in Z. *nemach-tschipachquall* 'Indian shoes'.
46. *piachikan* 'gun'; B. *paiachkikan* 'gun'; lit. 'one fires it off'; from *paiach-kummen* 'fire off'. Contains Eng. 'fire' = *paia*; cf. Chinook Jargon word *piak* 'fire'. The consonant *f* is foreign to many Indian languages.
47. *punck* 'powder'; B. *ponk* 'dust' (A. 'ashes, powder'); Z. *atta ne-ponegomivi* 'I have no powder'.

48. *alunse* 'lead'; B. *alluns* 'arrow' (A. first 'arrow'; then 'bullet'). Proper word for 'lead' was *tákachsin* 'soft stone' (P.).
49. *assin* 'stone, iron, brass' (i. e. 'anything hard'; P.); B. *achsin*; Z. *achsün*. In Del. 'iron' was *sukachsin* 'black stone' (P.); Z. *sukachsün*.
50. *assinnus* 'kettle, pot'; a jargon word from *assin* 'stone, iron,' etc.; B., Z. *hoos* 'kettle'.
51. *temohickan* 'ax'; Z. *t'mahican*; B. *temahikan*.
52. *quippeleno* 'hoe'; B. *achquipelawon*.
53. *pocksucan* 'knife'; A. *pachschikan*.
54. *tocosheta* 'pair of sissers'; contains root of B. *kschikan* 'knife'.
55. *shuuta* 'tobacco'; B. *kschatey*.
56. *hapockon* 'pipe'; Z. *hopoacan*; *achpiguon*. A. "archaic".
57. *brandywyne* 'rum'; proper word; *lilenowokgan*; Z.
58. *netap* 'friend'; really 'my friend'; cf. Pass. *nitap*, *kitap* 'my, thy I.' The full phrase here in the ms. seems to be *hiyoll netap* 'good be to thee friend', or 'thou good friend'. This *hiyoll* appears to be a part of the verb 'to be' = *hiyo*; cf. *yu* in Aben. and Pass. 'it is', and probably the root of *wul-* 'good'. The sentence is indistinct.
59. *tachomen* 'whence comest thou' = *ta* 'where' + *k*, 2 p. + *omen* 'come from'; cf. Z. *tacúmen*; same meaning.
60. *tacktaugh matcha* 'whither goest thou?': Z. *matchil* 'go home'; but in Pass. *mach*, *maj* is the common root 'to go'. *Tacktaugh* = *ta* 'where' + *k* = 2 p. + *ktaggh*, same element seen in Pass. future *kti*.
61. *tana ke-matcha* 'whither goest thou?' Cf. Pass. *tan* 'where, whither'. Cf. nr. 221. *Tana* = 'when', 119.
62. *Undoque* 'yonder' (little way); B. *undachqui* 'whereabouts'; *undach* 'here, this way'. Cf. 113-222.
63. *kecho lwense* 'what is thy name'? Really = 'his name'. B. *lúwunsu* 'he is called'; Aben. *lúwito*; Pass. *w't-léwis*. Cf. nr. 206.
64. *hickole* 'yonder'; Z. *ikalisi*; B. *ika talli*.
65. *kecho kee hatta* 'what hast thou?': B. *olhutton* 'have, possess'. Cf. nr. 194.
66. *matta ne hatta* 'I have nothing'; B. *matta* 'no, not'. Cf. nr. 95.
67. *nee hatta* 'I have'.
68. *cutte hatta* 'one buck'; lit. '(I) have one'; 'buck' = *ajapen*; B. and Z.
69. *nonshuta* 'doe'; B. and Z. *nunschello*.
70. *hayes* 'skin' (not dressed); B. *chez*; Z. *choy*.

71. *tomoque* 'beaver'; B. *ktemaque*; Aben. *tamo'kwa*.
72. *hunnickick* 'otter'; B. and Z. *gúnamochk*.
73. *mwes* 'elk'; B. *mos*; Z. *moos*.
74. *mack* 'boar'; I cannot place; B. gives *welchos* 'stallion, boar'. It is possible that the writer meant to write *wack* which might be a corruption of *welchos*.
75. *hoccus* 'fox'; Z. *woukus* 'gray fox'. Note the mod. N. J. place-name *Hohokus*, still translated "many foxes". This is probably an abbreviation of *hókusak* 'foxes'.
76. *nahaunum* 'raccoon'; Z. *náchenum*. The Minsi word was *espan* (cf. A. in Brinton), a word which still lives in the Jersey Dutch of Bergen County *hāspān*; cf. J. D. Prince, *The Jersey Dutch Dialect*, *Dialect Notes*, vol. III, part vi, p. 479.
77. *lingues* 'wild cat'; Z. *tschingue*. In the Minsi of the north, a form similar to the Pass. *lox* 'wolverene' must have existed, as we find the word *kātelds* for 'wild cat' in Jersey Dutch (Prince, op. cit., p. 484).
78. *hannick* 'squirrel'; Z. *unicus* 'fence-mouse' = 'ground squirrel' or 'chipmunk'.
79. *tumaummus* 'hare'; Z. *tschemammus*.
80. *miningus* 'a minks' = 'mink'; Z. *winingus*. This seems to show the derivation of the Eng. *mink*; Swed. *mānk* from the Delaware dialects.
81. *Iwse* 'I use meat' or 'flesh'; really 'meat'; B. *ojoos*; Z. *ojos*.
82. *kush-kush* 'hog'; B. and Z. *gashgash*; *onomaipoeia*.
83. *copy* 'horse'; I cannot place. The proper word was B. *nenajungus*; Z. *nechnajungees*. *Kabay* is given by Thomas (see above Introduction).
84. *ninnenuggus* 'mare'; Z. *nechnaungesi ochquechum* = 'horse female'.
85. *muse* 'cow'; B. *mos*; now = 'deer' and 'elk' (A.).
86. *nonackon* 'milk'; I do not believe there ever was a Delaware word for 'milk'. This word in B. = *nonagan*; Z. *nunagan* 'nipple, mamma'.
87. *makees* 'sheep'; B. *mekis*, onom. from *memekis* 'bleat'.
88. *minno* 'driak' or 'ale'; B. *menen* 'drink'; *menewagan* 'drinking'; Z. *menewoucan* 'drink' (u.).
89. *pishbee* 'small beer'; Z. *mbil* 'beer'. Contains the root *-bi* 'water'.
90. *hosequen* 'corne'; Z. *chasqueem*; B. *mesaqueem* 'ear of c.'.
91. *pone* 'bread'; B. and Z. *achpoan*; B. *nd-apponhe* 'I make br.' This word survives in the Amer. South for 'corn-bread'.
92. *hoppenas* 'turnips'; B. *hobbin* 'potato'; Z. *hobbenis* 'turnip', with dim. *-is*.

93. *seckha* 'salt'; Z. *sikey* (A. "archaic").
94. *kee wingenum une* 'dost thou like this'; *une* = B. *won* 'this'.
95. *matta* 'no'; B. and Z. *matta* 'no, not' = the neg. *atta* with *m*-prefix.
96. *me matta wingeni* 'I don't care for it'; note the Eng. *me* in the jargon for Del. *ne-ni* and also the neg. *-i*.
97. *singkoatum* 'I do not care'; 'I will cast it away'; B. *schingatham* 'be unwilling, disapprove'.
98. *moechee* 'ay, yes'; Z. *moschiwi* 'clearly'; Z. gives *bischi* 'yes, indeed'.
99. *Me maholumi* 'I will buy it'; again Eng. *me* as above; Z. *mahallamen*; B. *mehallamen* 'buy'. The *-i* here may be a relic of the 1 p. *-i* = 'I will buy it for myself' (?).
100. *ke manniskin une* 'wilt thou sell this'? The stem *mahal* = 'sell'; cf. Z. *na* (sic! = *ne*-) *mahallamagentsch* 'I will s. it'. In Aben., however, *manahdmen* = 'sell'; clearly same stem as here.
101. *kecko gull une* 'how many guilders for this'? On *kecko*, see nr. 34; *gull* 'guilder'; Dutch *gulden*.
102. *kako meele* 'what wilt thou give for this'? The root *mil* is common Algonquian for 'give'; cf. Pass. *ke'kw k'millin wechi ni* 'what wilt thou give me for this'?
103. *cutte wickan cake* 'one fathom of wampum'; cf. B. *newo wikan* 'four fathoms'.
104. *nee meele* 'I will give thee'; should be *k'milen*, Z.; cf. Aben. *k'milel*. Cf. nr. 144.
105. *cutte steepa* 'one stiver'; Dutch *stuiver*.
106. *steepa* 'farthing' = 'stiver'.
107. *cutte gull* 'one gilder; sixpence'.
108. *momolicomum* 'I will leave this in pawn'; must contain root *mol*, seen in Z. *wulatschi-mol-sin* 'treat about peace'.
109. *singa kee natunnum* 'when wilt thou fetch it'? Z. *tschinge* 'when'; B. *naten* (A. 'go after something'); Z. *n'natammen* 'I will fetch'.
110. *singa kee petta* 'when wilt thou bring it'? Z. *pëtoon* 'bring'.
111. *necka couwin* 'after three sleeps; 3 daies hence'; Z. *gauwin* 'sleep' (cf. nr. 183).
112. *tana kee natunnum*; see 109.
113. *undoque* 'yonder'; see 62.
114. *singa* 'when'; Z. *tschinge*.
115. *iucka* 'day'; really B. *juke* 'now'; *juke gischquik* 'to-day'. Cf. nrs. 129; 257.
116. *kis quicka* 'this day; a day'; B. *gischquih*; Z. idem.
117. *hapitcha* 'by and by'; Z. *pecko*; B. *apitschi*.

118. *alloppan* 'to-morrow'; Z. *alappa*; A. *ajappa*.
119. *tana hutta* 'when hadst thou it?' *Tana* 'whither' (61) = Pass. *tan* 'what, where, when'.
120. *quash matta diecon* 'why didst thou lend it?' B. and Z. *quatsch* 'why'; note Z. *k'nattemihi* 'lend me'. The m. form must be for *k'nattadikon* 'he lends it to thee'; cf. Aben. *k'mil'gon* 'he gives it thee'.
121. *kacko pata* 'what hast thou brought?'; B. *peton*; Z. *pêtoon* 'fetch'. Note the absence of the personal prefix.
122. *cultas quing quing* 'six ducks'; cf. nrs. 6 and 23.
123. *olet* 'it is good'; B. and Z. *wulit*.
124. *matta olet* 'it is bad'; lit. 'it is not good'.
125. *matta ruti* 'it is good for nothing'; *matta* 'not'; *ruti* = *Iuti* = the stem *wul-* + the neg. *-i*.
126. *husco seeka* 'it is very handsome'; B. and Z. *husca* 'very'; Z. *schiki* 'handsome'.
127. *husco matit* 'it is very ugly'; Z. *machtit* 'ugly'.
128. *ke runa matauka* 'thou wilt fight'; quite a wrong translation; *ke runa* = *kiluna*, the incl. 'we'. The plural 'you' would have been *kiluwa*; 'thou' = *ke*.
129. *Iough matcha* 'get thee gone'; lit. 'now go'; *iough* = B. *jake* 'now'; cf. nr. 115; *matcha* 'go depart'; cf. nrs. 60; 61.
130. *undogue matape* 'sit yonder'; Z. *hemattuchpil* 'sit'.
131. *ne mathit wingenum* 'we will be quiet'; really 'I will', etc.; *mathit* must be a corruption of Z. *clammieche* 'be still, lie quiet'; B. *klamachpin* (?). Note the apparent use of *wingenum* 'wish', for the future. The jargon reproduces the guttural by *th*; cf. nrs. 235; 260.
132. *noa* 'come hither, come back'. Probably from B. *nawochgen* 'follow', seen also in the resumptive *nawu*.
133. *payo* 'to come'; B. *paan*; Z. *pen* 'he comes'.
134. *match poh* 'he is come; coming'. This use of *match-* to denote the present action is common in Aben. and Pass. Note Z. *peu* 'he comes'.
135. *raa munga* 'within'; Z. *allamunque*. *raa-m* = *lam* in Aben. and Pass. *lami* 'within, inside'.
136. *cochmink* 'without'; B. *kotschemnink*; Z. *kotschmunk*; Pass. *kotchmek*.
137. *lungshena* 'open'; Z. *ntunkschememen* 'I open it'; B. *tenktschechen*; *tenktschenemen*.
138. *poha* 'shut'; B. *kpahi*; A. *kpahhi*; Pass. *k'baha*.

139. *scunda* 'the door'; Z. *esquande* = *Eingang*.
140. *ke cakeus* 'thou art drunk'; Z. *achkienchsü* 'a drunken man'.
141. *opposicon* 'beyond thyself' = 'drunk'. Probably = B. *achpussin* 'broil, roast'; here = *achpussikan* 'he broils him; he is broiled'; slang (?).
142. *husko opposicon* 'much drunk'.
143. *mockorick* 'a great deal' = B. *mechakgilik* 'great'; *macheli*; *mecheli* 'more'.
144. *maleema cacko* 'give me something'; *mil* 'give' (see nr. 104); the form should be *milil* 'give me'; Aben. *milin*.
145. *abij*; *bee* 'water'; Z. *m'bi*; B. *mbi*; Aben. *nebi*.
146. *minatan* 'a little cup to drink in'; *men* is a common Algonquian stem 'to drink'; B. *menachtin* 'drink together'.
147. *mitchen* 'victuals'; B. *mizewagan*; Z. *mizewoagan*.
148. *mets* 'eat'; Z. *mizin*; and cf. Aben. *mils* 'eat'.
149. *poneto* 'let it alone'; Z. *ponih* 'leave off, let it alone'; B. *ponemen* 'let go, leave off'. Cf. Pass. *pon'mont'hüg'n agwed'nuk* 'put the paddle in the canoe'.
150. *husco lallacutta* 'I am very angry'; seems to mean 'irritated'; Z. *lalha* 'scrape'; B. *lathan*. Properly 'angry' was B. *manunxin*.
151. *ke husko nalan* 'thou art very idle'; Z. *nolhandowoagan* 'idleness'; B. *nolhand* 'lazy'.
152. *chingo ke matcha* 'when wilt thou go'? *tschinge* 'when'; cf. nr. 109.
153. *mesickecy* 'make hast'; *schanwessin*; Z. *schanwessi*; probably *mesickecy* is for *wesickecy*, a corruption of the *-wessin* element in the above words (?).
- 153a. *shamahala* 'run'; B. *kschaméhellan* 'fast'.
154. *husko taquatse* 'it is very cold'.
155. *ne dogwatcha* 'I am very cold; I freeze'. With these words, cf. B. *tachquatscho* 'he is cold, shivering'; Z. *tachquatschúwak* 'they freeze' (see 156).
156. *whinna* 'snow, hail'; Z., B. *winen* 'it snows'; same stem seen in Z. *guhn* 'snow' (see just below). *Whinna* cannot mean 'hail', which was *tachsigin*.
157. *ahalea coon hatta* 'have abundance of snow, hail, ice'; *ahalea* = B. *allowiwi* 'more'. *Coon* = Z. *guhn* 'snow' (156).
158. *lake* 'freeze'; B. *taguatten* 'frozen'; *taguatschin* 'freeze'.
159. *suckolan cisquicka* 'a rainy day'; B. *sokelan* 'it rains'; Z. *socelantsch* 'it will rain'; Aben. *soglón* 'it rains'.
160. *loan* 'winter'; Z. *lowan*; B. *loan*. Cf. 180.

- 160a. *sickquim* 'the spring'; B., Z. *siquon*; Z. *siequange* 'next spring'; Pass. *siguak* 'in spring'.
161. *nippinge* 'summer'; really 'next summer'; B., Z. *nipen*.
162. *tacochquo* 'the full'; B. *tachquoak*.
163. *tana ke wigwum* 'where is thy house'; B. *wikwam*; Z. *wiquoani*.
164. *hockung kethaning* 'up the river'; B. *kittan* 'great (tidal) river'.
The last element *-tan* is the same as that seen in *manhattan* = *m'na'tan* 'an island surrounded by tidal water' = *-tan*. The word *hockung* must have meant 'down (the river)', as it = *hakink* 'on the earth, down, under'. Upstream = *nallahiwi*, B.
165. *tana matcha ana* 'where goes the path'? B. *aney* 'road, walking road, path'. Cf. nr. 200.
166. *iough undoque* 'go yonder'; lit. 'now there'; cf. nr. 115.
167. *hitock* 'a tree'; Z. *mehlittuk*.
168. *hitock nepa* 'there stands a tree'; Z. *nipu* 'he stands'.
169. *mamanktikun* }
170. *mamadowickon* } 'peach or cherry'; I cannot place.
171. *manadickon* }
172. *virum* 'grapes'; both B. and Z. *wisachgin*; probably should read *visum* (?).
173. *acotetha* 'apple'; must be the same stem as Z. *achquoaci-lennees* 'blackberries'; no doubt a misapplication. Both B. and Z. give *äpel* for 'apple'.
174. *hosquen* 'corne'; Z. *chasqueem*; B. *chasquem*.
175. *cohockon* 'mill'; B. *tachquahoakan*; Z. *tachquahodcan*.
176. *locat* 'flower or meale'; B. *lukat*; Z. *lôcat*.
177. *keenhammon* 'grind it'; B. *kikhammen*.
178. *nutas* 'bag, basket'; B. *menntes*; the ending *-notey* occurs in Z. *hembinotey* 'bag of linen'. This *nt*-root is seen in Pass. *b'snud*; Aben. *abaznoda* 'basket', lit. 'a wooden bag' (Pass. *opus*; Aben. *abazi* = 'wood, tree').
179. *poquehero* 'it is broke'; B. *poquihillen*.
180. *roanonhheer* 'a north-west wind'; Z., B. *lowandchen* 'north wind'; lit. 'winter-wind'; cf. nr. 160.
181. *rullehock* 'the ground will burn and be destroyed'; B., Z. *lâteu* 'it burns'; *haki* 'earth'.
182. *hockcung* 'a chamber'; lit. 'on the ground'; cf. nr. 164. B. gives *wikwamtit* 'chamber'; lit. 'little (-tit) house'.
183. *quequera gulam tanansi oke cawin-kee catungo* 'where I look for a place to lie down and sleep, for I am sleepy'. This phrase

- appears on three lines in the ms. and was thus copied by Lossing. The sentence seems hopelessly corrupted, probably by the original scribe. I can find nothing to indicate what was meant by the words *quequera qulum tanansi*, except by supposing that in *tanansi* we have some form of the stem seen in *ndoniken* 'he seeks me'. *Oke* is 'and' = *woak*; cf. nr. 11. *cowin* 'sleep' = *Z. ganwin*; cf. nr. 111. The words *hee catungo* = 'thou art sleepy' and not 'I', as above. They were either wrongly introduced here, or else the whole phrase should be in the 2 p. It may be noted that the *q* in *quequera* and *qulum* may be indications of the 2 p. = *k*.
184. *aloppa* 'to-morrow'; cf. nr. 118. This probably goes with what follows.
185. *ne hattunum hwiissi takene* 'I will go a-hunting in the woods'; in two lines in the ms. With *ne hattunum hwiissi*, cf. *Z. ndochwisi* 'I go hunting'. The usual root is *allaawi*; cf. J. D. Prince, "The Modern Minsi Delaware Dialect," *Amer. Journ. of Philol.*, XXI, pp. 294-302. 'In the woods' was properly *ikkenink*; B., *Z. ikene*.
186. *attoon attonamen* 'going to look for a buck'; *attoon* = *Z. achtu* 'deer'. This word probably is concealed in the modern corrupt form *Tuxedo* which the Marquis de Chastellux in 1785 translated 'there are plenty of deer'; i. e., *Tuxedo* possibly = *achtuhuxitonk* = B. *achtuhu* 'there are many deer' + *-xit* 'where one gets them' + the loc. *-onk* = 'place where one gets many deer'. *Attonamen* is from *naten* 'go after something'. The form should be *n'naten* 'I seek him' (anim.); (n)attonamen is inanimate and wrong here.
187. *matcha pauluppa shuta* 'I have catst (sic!) a buck'; B. *palippawe* 'buck' and *Z. ichunisu* 'caught' (sic!) from which *shuta* is obvious. The entire phrase means 'I am going (*matcha*; nr. 60, for *nee matcha*) a buck to catch'.
188. *accoke* 'a snake'; B., *Z. achgook*; Aben. *skok*.
189. *mockerick accoke* 'rattlesnake'; lit. 'big [see nr. 143] snake'. *Z. wischalowe* = 'rattlesnake' (= 'frightener'; A.).
190. *husko purso* 'very sick'; *purso* = B. *palsin*; same stem seen in 191.
191. *tespahala* 'small-pox'; B. *despehellan*; *Z. despéhellen*. Stem is *pa(h)al*, *pehel* 'be sick', seen in B. *pal-sin* (nr. 190).
192. *nupane* 'the ague'; lit. 'it comes again'; B. *nohenopenowégan* 'the sickness which recurs again' (A.).
193. *singuope* 'hold thy tongue'; perhaps a corruption of B. *samuttonen* 'close the mouth'. The proper word was *tshitgussin* (Z.) = 'be silent'.

194. *singnap hockin hatta* 'be quiet, the earth has them; they are dead'. Earth = *Z. hacki*; *B. haki*. Cf. nr. 65 for *hatta* 'have'. The *-in* may be for the loc. *-ing, in̄k*.
195. *sheek* 'grass or any green herb' (should be *skeek*); *B. askiquall, skiquall*; *Z. masgik*; *B. maskik*. Cf. Pass. *m'shik'kwul* 'grasses'.
196. *hocking* 'the grounds'; *Z. hacki*; *B. haki* 'earth'; lit. 'in the earth'. Cf. Pass. *hi*; *Aben. a'hi*, etc.
197. *hockehockon* 'plantation'; *Z. hakihacan*.
198. *nea tukona* 'my country'; also from *hacki*; viz., *n* of the 1 p. + the intercalated *-t-* before a vowel or soft *h* + the element *uk-ak* = *hacki*.
199. *auritta* 'plaine; even; smooth'. This is simply *wulita* 'it is good', specially applied to land here. Properly 'plain' was *B. memgukek* (*A. schimgek*).
200. *ouna* 'a path; highway'; *B., Z. aney*. See nr. 165 spelled *ana*.
201. *singa mantauke* 'when we fight'; *tschinge* 'when' (see nrs. 114; 152); *B. machtagen*; *Z. machdageen* 'fight'. There is no indication of person in this phrase.
202. *ne holock*; Eng. not given (see nr. 205).
203. *ne rune husco kwissase* 'we are afraid'; should be 'much (*husco*) afraid'. *Ne runn* = *niluna*, the exclusive 'we'; cf. nr. 128, for *kiluna* the incl. 'we'.
204. *opeche kwissase* 'always afraid'; *Z. abtschi* 'always'.
205. *ne olocho toon* 'we run into holes'; verb-form, really 1 p. pl. excl. from *Z. wualac*; *B. wulak*; *A. waleck* = 'a hollow, excavation; not a hole which penetrates'. Nr. 202 above *ne holock* probably meant 'my hole' and was construed as 'arse-hole'; hence, the modest writer of the ms. left the English blank. The regular Del. word for 'arse-hole' was *saputti*; cf. J. D. Prince, "Dying American Speech Echoes from Connecticut," *Proc. Amer. Philos. Soc.*, XLII, p. 351.
206. *keeko kee lunse une* 'what dost thou call this'? Note *keeko*; should probably be read *kecko* (cf. nr. 34); *kee* = 2 p. sing.; on *lunse*, see nr. 63.
207. *checonck* 'looking-glass'. The usual expression was *B., Z. pepenauz* 'mirror', from *pipinamen* 'differentiate, choose'. The Natick word for 'mirror' was *pepenautchitchunkwonk*; Narr. *pebenochi-chauguánick* 'the thing by which one sees a reflection'. *Checonck* of the jargon ms. seems to contain the final element of a Del. word akin to these long combinations just indicated.

208. *pouutahan* 'a pair of bellows'; an inversion of Z. *putwōdagan*,
 209. *itcolohu* 'a cradle', for Z. *tchallan* 'Indian bedstead'; wrongly.
tschallaan in B.
 210. *mamolehickon* 'book or paper'; B. *mamalekhiikan* 'writing, letter'
 (A. "in crooked lines or stripes"); from *lekhammen* 'write'.
 211. *lecock* 'table, chair, chest'; evidently from *liechen* 'lie down';
 Z. *liwichin* 'rest'. Apparently a jargon word (?).
 212. *sepussing* 'creek'; diminutive locative of *sipo* 'river'; Aben. *sibo*.
 213. *kitthaning* 'river'; B. *kittan*; see nr. 164. *kitthaning* is loc. 'at
 the river'.
 214. *moholo* 'a canoe'; B. *amochol*; Z. *amōchol*.
 215. *rena maholo* 'a great boat or ship'; perhaps for *lina*(quot) *amochol*
 'it is like a canoe' (?).
 216. *taune kee hatta* 'where hadst thou it'? On *taune* see nr. 61; on
hatta, nrs. 65; 194.
 217. *ne tauille ke rune* 'I will tel thee'; verb-form from stem *ōl*; cf. Z.
ki-ōl-len 'I tell thee'. Here in the jargon they used the 1 p. +
 3 p. *ne tauille* = *nt-ōl-e*; lit. 'I tell him,' and added *ke runa* =
kiluno; see nr. 128.
 218. *ne maugholame* 'I bought it'; B. *mehallamen*; see nr. 99.
 219. *ke kamuta* 'thou hast stolen it'; Z. *com moot*; *com mootgeen* 'stolen';
kemodgēwak 'they have st. it'.
 220. *matta ne kamuta* 'no, I did not steal it'; see nrs. 66; 95 for *matta*.
 221. *taune maugholame* 'where dist thou buy it'? See nrs. 61; 99.
 222. A. B. *undoque* 'yond of A. B.' See nrs. 62; 113.
 223. B. C. *sickomeele* 'B. C. will give me so much for it'. Z. *sa-uchtend-
 chi* = 'how much'? A. *keechi* 'how much'. The *si-* element
 must be the *chi* in *keechi*; *komeele* = *k'mili* 'you give me'. The
 correct translation is probably 'B. C., how much will you give me?'.
 224. *lawwe* 'all'; Pass. *m'siu*; Aben. *m'ziwi*. The proper Del. word was
 B. *weemi*; Z. *weemi*.
 225. *hockung tappin* 'God's'; lit. 'on earth (*hockung*) is God' (*tappin* =
 Pass. *tepeltek*; Aben. *tabaldak* 'lord').
 226. *manitto* 'the Devill'; B. *Manitto* (A. 'spirit'); cf. Z. *manittowdhalan*
 'bewitch'.
 227. *renus* 'man' = *lenno*; see. nr. 228. The *-s* here is diminutive.
 228. *leno* 'man'; B. *lenno*.
 229. *peray* 'a lady' = *pelay*; same element as in Pass. *pil-* 'young',
 seen in Pass. *pil-skweessis* 'young woman, girl'. *Pelay-pelay*
 really means 'young female'.

230. *penaesit* 'boy'; for *penae-tit* = B. *pil-wessin* 'be a boy' (see nr. 229). The ending *-tit* is diminutive.
231. *issinius* 'a brother'; should probably be connected with Pass. *nsiwes* 'my brother'. This is the same stem seen in Z. *schiss* 'uncle'. Z. gives *nimat*, *kinat* 'my brother, thy brother'.
232. *runcassie* 'cousin'; B. *longachsiss* 'cousin', but A. = 'nephew'.
233. *mitthurrus* 'husband'; must = *witkullus* 'her husband'; same stem as in B. *allewussowagan* 'majesty, supremacy'. Cf. nr. 242.
234. *squaw* 'a wife'; a jargon word from the Natick *squaw* 'woman'. The kindred Del. was B. *ochque*; Z. *ochquen*.
235. *noeck* 'father'; Z. *nooch* 'my father'; *ochuall* 'his father', etc. Note the hardening of the guttural and cf. nrs. 260-261.
236. *anna* 'mother'; perhaps a jargon word. The proper Del. was B. *gahowes*; Z. *gahowes*.
237. *haxis* 'old woman'; corruption of Z. *chauchschissis*.
238. *aquittit* 'little girl'; B. *ochque-tit*; lit. 'little woman'. Ignores guttural.
239. *kini kiste* 'a maide ripe for marriage'; corruption of *choanschikan* 'virginity'.
240. *papouse* 'a sucking child'; a jargon word from the Natick, as nr. 234. Del. was B. *nonetschik*; Z. *nokulentschik* 'children'.
241. *munockon* '[?] or a woman'; na. indistinct. This is probably B. *allamachtey* 'womb, inward parts' (?), and denotes the *pudendum feminae*.
242. *qualis* 'a master'; *k'welis* 'thy master' from *allewas*, as in nr. 233.
243. *tollemuse* 'servant'; *w't-allewas* 'he hires (sends) him'; cf. B. *allogagan* 'servant'; Z. *allogdman* 'he is sent'. Is *allum* 'dog' from this stem? Cf. Aben. *w'd-alemos* 'his dog'.
244. *wheel* 'the head'; Z. *wihl*; B. *wil*.
245. *medha* 'the hair'; Z. *milach*; pl. *milchall*.
246. *skinch*; Z. *waschking*; B. *waschgink* 'eye'; cf. Natick *skicucks*.
247. *hickywus* 'the nose'; Z. *wickiwon*; B. *wikiwon*.
248. *fwon* 'the mouth'; B., Z. *wloon*.
249. *wippet* 'the teeth'; Z. *wiput*; B. *wipit*.
250. *pentor* 'the ear or hearing' = *k'pentol* 'I hear thee'; B. *pendamen* 'hear'; Z. *necama k'pendak* 'he hears thee'.
251. *quanguan* 'the neck'; Z. *schquecanggon*.
252. *nacking* 'the hand'; B. *nackk*; properly 'my hand'.
253. *powacka* 'the hands'. I cannot explain the prefix.
254. *wotigh* 'the belly'; B. *wachtey*.

255. *hickott* 'the legs'; Z. *wickuat*.
 256. *ceel* 'the foote'; B. *w'sit*; Z. *w'chsiit*.
 257. *iucka* 'a day'; B. *jucke* 'now'; Z. *jucke*. Cf. nrs. 115, 129.
 258. *hishquecon* 'a week'; B. *gischquih*.
 259. *kisho* 'a moneth'; B., Z. *gischach* 'month'.
 260. *cohtingo* 'a year'; B. *gachtin*; Z. *gachtün*. Note the rendering of the guttural in the jargon by *th*. Cf. nr. 235.
 261. *passica catton* 'a halfe yeare'; B., Z. *pachsiwi* 'half' + *catton* = B. *gachtin*; Z. *gachtün*. Here the guttural is ignored in the jargon. Cf. nr. 235.

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THE MEXICAN MAIZE SEASON IN THE CODEX FEJÉRVÁRY-MAYER

By STANSBURY HAGAR

THE writer has referred in a previous paper to the group of asterisms which Duran pictures as governing the eighteen months of the Mexican year. He indeed sometimes describes these asterisms as planets governing the days of these periods, but elsewhere compares them with our zodiacal signs, and a careful reading of the text makes it clear that he refers to the eighteen Mexican zodiacal asterisms.¹

In this sequence the signs Cancer, Virgo, and Libra are represented respectively by a man standing in flowing water beside a growing maize plant, an emerald (symbol of the Maize Goddess), and a mummy (symbol of the Death God). In the Borgiano and related codices Cancer, Leo, Virgo, and Libra are figured as the Water Goddess, Tezcatlipoca, the Maize God, and the Death God.²

On sheets 33 and 34 of the Codex Fejérváry-Mayer, Loubat edition, there are two sequences of interrelated symbols which support these identifications by associating the signs as named with the maturing of the maize crop upon the Mexican plateau.

It is not possible to specify the particular portion of the plateau to which these figures refer, nor is this necessary for our purpose. One writer has suggested the probability that this codex pertains to the Mixtecan or Zapotecan region because of its use of the Maya numeration by bars and dots with the Nahuatl symbols. It suffices for us that there are parts of the plateau where the seasons correctly correspond with the symbols to be described. And the correspondence between the astronomical symbols of the various nations

¹ Duran, *Historia de las Indias de Nueva España*, vol. II, Mexico, 1880. Hagar, *Zodiacal Elements of the Mexican and Maya Months and Day Signs*, *Int. Cong. Americanists*, Mexico, 1910 (not yet published).

² Hagar, *Elements of the Maya and Mexican Zodiacs*, *Int. Cong. Americanists*, Vienna, 1908, p. 277 et seq.

of Mexico and Yucatan is sufficiently marked to justify comparison between them and between the deities with whom they are associated.

On the lower half of the sheets named (pl. XXXIV), reading from right to left in the usual manner, we see the sequence of deities described above standing with upturned faces before a temple and holding in their right hands an offering to the celestial powers, except that the Sun God takes the place of the Water Goddess. But it is not difficult to see why the Sun God equally pertains to the sign Cancer, for the symbols of this sign are the fire-sticks with which the new fire was lighted at the time of the June solstice, when the sun was supposed to attain his greatest power in the northern hemisphere. At this time at Izamal, in Yucatan, and elsewhere, the sun was represented as an ara of fiery plumage which descended upon an altar at the solstitial noon to consume the offerings there. Both the ritual and the myth evidently refer to solstitial worship of the Sun God, and on sheet 12 of the Cospiano codex he is depicted facing the solstitial temple of light, within which is the fiery ara. This may explain the bird-head above the head of the Sun God, though, according to Seler, the quetzal is represented instead of the ara. Moreover, on the roof of the temple before which the Sun God stands in the Fejérváry-Mayer codex we see the emerald, symbol of the Water Goddess, whose Nahuatl name is *Chalchiuitlicue*, the Emerald Woman. Above the Sun God is the solar disk surrounded by a fiery cloud—the fiery sun of the June solstice. There are also flowers upon the temple roof, and within the temple sits a deity believed by Seler to be the Flower God. He may represent the outburst of flowers with the coming of the rains at this season.

On the lower left side of sheet 33 we see the god who corresponds to the Nahuatl deity Tezcatlipoca presenting the offering, while a puma-head deity sits within the temple. Both Tezcatlipoca and the puma are used as symbols of Leo in the Borgiano Codex group.

In the third group on the right of sheet 34 the Maize God holds the offering, and a variant form of the same deity sits in the temple before a dish which probably contains maize grains. A fruit-bearing plant issuing from the headdress of the standing deity may indicate

the harvest season. The maize deity pertains to Virgo in the Borgiano group. Finally, on the left of sheet 34 the Death God holds the offering before a temple in which the Death Head with the protruding tongue rests upon a chair. This doubtless represents the Nahuatl *tlahťouani*, or oracular priest, who announces the wisdom supposed to be obtained by communion with the spirits of the dead. He and the Death God symbolize the two signs Libra and Scorpio in the Borgiano group and elsewhere.

Passing now to the upper row of figures, the first on the right depicts the Water Goddess supporting a leaning maize plant which is personified as a man and is rooted in water. Above the goddess a cloud tree pours rain upon the burnt offering. The identity of these symbols with the Cancer symbols below them and with Duran's Cancer asterism is evident, so we may interpret them as referring to the upgrowth of the young maize under the influence of the first rains in June and July. In fact Duran, referring to this asterism, writes that the wet season now began and the crops increased in size. In the second tableau on the left the sky is half clouded, half light, suggesting the showers of August. The maize plant, now much more erect, is still supported by a deity, here perhaps a form of the Maize God, who seems to be urging it upward. In the third tableau on the right of sheet 34 the maize plant is now fully erect, and the dark tips of the two ears depict the black corn-silk which marks its ripening. This is the Nahuatl *Xochitl Itacan*, the "Place where flowers stand upright," the paradise of the deities governing food supplies. It is a form of the Tamoanchan, or Garden of the West, the place of origin.¹ A comparison of this symbol with the Tianquiztli, or Market Place, of Sahagun's Virgo asterism reveals a common basic symbolism associated with the productive forces of Nature. In the drawing before us the maize plant is now figured as a woman richly clothed, doubtless the Goddess of the Maize. It is supported by the Rain God, who has brought it to maturity. In Duran's figure a man holds a maize ear with ripe silk. These symbols should correspond in the sequence with the sign of the Maize God, our Virgo, and with the month of September.

¹Scler in Cod. Fejérváry-Mayer, p. 124.

The following drawing represents a small, unfertile plant bearing a single ripe ear. It is attacked by four birds and a mouse, from which it is protected by a warrior deity. The interpretation is not difficult. The sun passes out of the fertile month and sign of the Maize Deity of the harvest into the dry and barren months and signs of *Libra* and *Scorpio*. The rains cease and vegetation begins to wither and die, hence the association with death symbols. But in October a scanty harvest of later ripening is still saved from the attacks of birds and mice by the husbandman, who drives them away from his fields.

According to Señor Don Valencia, Director of the Central Agricultural Station of Mexico, whose statement has been kindly procured for me by Prof. Manuel Gamio, of the National Museum, there are many regions on the Mexican plateau where maize can be and is sown in March and reaped in September, although today this is not customary, as maize can be grown with less risk before the season of heavy rains. It is an interesting question whether these pages of the *Codex Fejérváry-Mayer* refer to a ceremonial growing of maize in harmony with the supposed influences of the zodiacal asterisms.

Thus it will be noted that the symbolism of the maize harvest depicted upon the upper half of the sheets mentioned may harmonize with the actual maize season of the Mexican plateau, and that the symbols of each season correspond equally well with those of the zodiacal sign that governs it and which is represented directly below. One day-sign accompanies each of the upper drawings, and five day-signs each of the lower drawings. They undoubtedly refer to some more complex calendric symbolism associated with the sequence of the four signs just described. Only one of them is placed with the zodiacal sign to which it pertains astronomically. But Dr Seler correctly associates the four drawings both above and below with the cardinal points—east, north, west, and south, respectively. Cancer, the dawn sign of the solar year, with its new-fire symbolism, naturally represents the dawn or eastern sign. The Leo asterism is called the Wheel of the North, and its day-sign *Ecatl* is probably associated with the cold north wind. The

Maize Deity, Tamoanchan, the Western Paradise, and the day-sign Calli, or House, all Virgo symbols, pertain emphatically to the west. This leaves Libra to represent the south, and, though the symbolism here is not so clear, the death attributes of this sign may represent the passage of the sun into the southern signs of drought and dying vegetation.

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CHANGES IN THE BODILY FORM OF DESCENDANTS OF IMMIGRANTS

By FRANZ BOAS

UNDER this title I have published the results of my investigations on the anthropometry of immigrants and their descendants, undertaken for the United States Immigration Commission. A partial report was asked for by the Commission and submitted to Congress on December 16, 1909, and published about March, 1910. It was stated in the report (p. 6) that the investigation was not complete. An abstract of the complete report was submitted to Congress on December 3, 1910, and issued on March 17, 1911. The final report was presented on December 5, 1910, by the Secretary of the Commission, submitted to Congress on June 8, 1911, printed in September, 1911, and issued in May, 1912. It was reprinted and published by the Columbia University Press in New York in 1912.

I may summarize the principal results of this investigation as follows:

1. American-born descendants of immigrants differ in type from their foreign-born parents. The changes which occur among various European types are not all in the same direction. They develop in early childhood and persist throughout life (Partial Report, pp. 7-16; Abstract, pp. 11-28; Final Report, pp. 55-56, and tables, pp. 10-55).

2. The influence of American environment makes itself felt with increasing intensity, according to the time elapsed between the arrival of the mother and the birth of the child (Partial Report, pp. 17-22; Abstract, pp. 29-37; Final Report, pp. 57-64, 99-115).

3. The observations on intraracial heredity show an increased variability of children of dissimilar parents, which proves a regression of the children to either parental type, not a regression to the mid-parental type (Abstract, pp. 54-55; Final Report, pp. 76-78, 153-154).

4. The head measurements show the same acceleration of growth during the prepubertal period as has long been known for measurements of the bulk of the body, i. e., stature and weight (Abstract, pp. 55-57; Final Report, pp. 78-79, 137-151).

5. The average stature of children decreases with the size of the family (Partial Report, p. 28; Abstract, p. 57; Final Report, pp. 79-80, 161-166).

Incidentally a number of problems were touched upon which are, however, of secondary importance in relation to the whole problem, and the investigation of which was necessary for the correct interpretation of the observations referred to before.

The comparison of immigrants and their descendants necessarily refers to groups which immigrated at different periods. For instance, 15-year old American-born boys are children of parents who immigrated more than 15 years ago; while 15-year old foreign-born boys are children of parents who immigrated less than 15 years ago. If, therefore, the constitution of the immigration representing a certain people changed, there would be an apparent change of type, which in reality would reflect only the differences in type of the immigrants of various periods. The investigation in question showed the following:

6. Individuals who immigrated in any particular year and the descendants of mothers who immigrated in that year show the same differences in type as have been observed for the whole series (Abstract, pp. 44-46; Final Report, pp. 65-69, 108, 111, 113).

7. Foreign-born parents when compared with their own foreign-born and American-born children exhibit the same types of differences for the children as the whole series (Partial Report, pp. 44-50; Abstract, p. 47; Final Report, pp. 69-70, 117-128).

8. When the Hebrew boys are classified according to their pubescence in groups of about equal physiological development, the same differences persist (Partial Report, pp. 25-28; Abstract, pp. 38-43; Final Report, pp. 126 et seq.).

9. It seems that after the panic of 1893 a decrease in the general development of the Hebrew immigrants appeared, which continued for several years (Partial Report, pp. 28-29; Final Report, p. 65).

		AGES																							
		5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		
Bohemians, Poles, Hungarians, Slovaks	males	25.4	26.0	14.0	15.3	14.4	13.7	13.9	13.2	12.5	12.0	11.7	11.0	10.0	11.1	10.6									
	females	15.8	15.0	14.9	15.5	14.6	14.2	13.8	13.5	13.0	12.6	12.1	11.6	10.8	10.1	10.6									
	males	22.5	13.5	11.7	12.1	10.6	10.1	10.5	10.1	10.0	9.6	9.3	9.3	9.7	9.0	8.4									
	females	12.6	12.0	11.0	12.1	11.4	10.7	11.1	10.7	10.1	10.4	9.6	9.0	10.1											
Hebrews	males	20.2	20.9	10.6	10.4	8.4	9.4	10.0	8.5	7.0	8.5	7.8	8.6	6.3	6.0	7.5	8.0	7.6	7.6	6.3	6.1	8.6			
	females	10.6	10.7	10.5	10.4	10.5	9.4	10.0	9.2	8.3	7.6	6.9	8.5	7.7	7.5	6.4	6.5	6.9	6.9	5.9	6.5	6.0			
Sicilians	males	11.5	10.6	11.8	10.7	10.3	9.6	8.2	8.0	8.3	8.2	8.1	8.0	7.7	8.5	6.5	6.4	7.6	7.2	8.2	6.2	4.6	8.6		
	females	11.1	11.1	11.5	11.1	10.6	9.9	10.1	9.9	9.0	8.4	8.2	7.8	7.8	7.8	8.1	7.3	7.9	7.9	8.5	7.7	4.9	8.5		
Neapolitans	males																								
	females																								

10. I think the investigation on color of hair also deserves special mention. Basing my inquiry on the assumption that the variations of hair color in any particular people follow the exponential law, I have shown that numerical values for pigmentation can be obtained (Final Report, pp. 93-98). I have divided the whole series of pigmentation from black to ash-blond in 20 equidistant steps, 0 being black, 20 ash-blond, but not without pigment like the hair of albinos. In this manner the results given in the accompanying table showing the degree of darkening with increasing age were obtained.

According to this table in the male the darkening amounts to nearly 5 units—one-fourth of the whole scale of colors. If the amount of darkening of females in the first two groups is less, we have to allow for the dyeing of hair, which is practised by many women, and also for the use of false hair by married Jewesses. For this reason I do not lay great stress upon the figures obtained from observations on adult females, except among the Italians. It would seem as though among them the hair of women averages a little lighter than that of men. This apparent difference may, however, be due to the lighter color of the tips of the long hair of women. The process of darkening progresses at least until the twenty-

sixth year, if not longer. An attempt to calculate the annual amount of darkening for the Hebrews shows this very clearly. For dark-haired as well as for light-haired groups the darkening amounts to about 0.2 points a year.

My conclusions have been assailed by a number of critics. The questions here summarized seem of sufficient importance to justify a reply to the various objections raised.

I must apologize to anthropologists familiar with the methods of anthropometry for the space taken by a discussion of the criticisms by Mr Radosavljevich, which appeared in the July-September, 1911, number of this journal, pages 394-436 (issued in February, 1912), in which the author assumes the pose of an expert, with what right will appear from the following remarks. Since the *American Anthropologist* submits contributions before acceptance to the judgment of authorities, and since, nevertheless, the article has found its way into the journal, it would seem that a discussion of certain elementary facts of anthropometrical method may be useful not alone to the reader unfamiliar with the subject.

Before entering into the various criticisms, I have to make a few general remarks on Mr Radosavljevich's paper. Among other recriminations he accuses me of inaccuracy of calculations (l. c., p. 412). It is unfortunate for his argument that the disagreements in calculations are solely due to the faulty method that Mr Radosavljevich has applied in taking his arithmetical means. He gives each value equal weight, while, as is taught in elementary arithmetic, each should be given a weight according to the number of cases of its occurrence. The second discrepancy that he has found (p. 422) is due to his faulty arithmetic.

In sharp contrast to his criticisms based on my failure to quote literature,—which I deem unnecessary when the works quoted do not serve a specific purpose germane to the work in hand,¹—is his

¹ On page 427 he accuses me of misuse of literary evidence. He enumerates without critique the opinions of authors who have claimed that the cephalic index during growth decreases, or that it is stationary, or that it increases. He objects then to my statement that it decreases. The proof is given in the Abstract, pp. 55-57, which Mr Radosavljevich never mentions, and more fully in the Final Report, pp. 137-151. The conclusion that because I do not quote certain literature, I do not know it,

own failure to take notice of the abstract of my Final Report which appeared eleven months before the publication of his review, and the misleading inaccuracy of his quotations. Thus, on page 425, he reproduces from page 11 of my Partial Report, three headforms, and says (p. 427): "These sketches of headforms are, therefore, based not on his [Boas's] measurements but on pure imagination," suppressing my note which is found in the text and in the legend of the sketches in question: "These sketches are intended only to give an impression of the change in proportions. They do not represent the headform in detail."

Again on page 423 he alleges he has found "a few more" errors in tabulations, but repeats, as new, statements made previously by him on page 417. (In regard to these tabulations see p. 540.)

On page 421 he says: "We are surprised indeed that he has not a single table in his appendix referring to Sicilians, yet throughout his report he comes again and again to his discovery that very short-headed Jews are becoming 'long-headed' and very 'long-headed' Sicilians 'short-headed.'" He mentions this matter again on page 410. Still I say expressly in the Report which he reviews (p. 30) that "the present report is based only on a partial discussion of the Hebrew material and the generalized averages of the Sicilians and Calabrians."

He continues on page 421: "Instead of these [tables relating to Sicilians] he gives tables occupying eleven full pages, relating to his old study of the stature of Toronto children, and having no connection at all with his study of the descendants of immigrants." He does not say that the tables were to elucidate an entirely new point, the dependence of stature upon size of family (Partial Report, p. 28), which has a direct relation to the problem in hand and for the elucidation of which the tables are necessary.

Another complete change in my meaning is brought about through omissions in the following quotation from page 39 of my

shows a curious lack of logic. In the Abstract, pp. 55-56 (also Final Report, pp. 144 et seq.), Mr Radosavljevich might have found utilized the literature which he quotes, I refer him also to my discussions of the subject in *Science*, n. s., 14, 1896, pp. 50-51.

Report (l. c., p. 394). Words printed in italics have been omitted by Mr Radosavljevich.

"The changes in the amounts of measurements for different periods are, however, so irregular, that even with the numbers thus obtained no very clear results appear. It would seem that on the whole there has been a decrease in the length of the head, width of the head, and width of the face since the middle of the last century, but the change that has taken place is rather slight. A feature that is particularly noticeable is the general drop of all the absolute measurements after the year 1894. An attempt to combine all the material, adult and children, for these years, brings out the sudden drop after 1893 even more clearly; and a similar phenomenon is repeated between the years 1907 and 1909. For this reason I am inclined to believe that the type of immigrants is directly affected by financial panics. This can be due only to a selection that takes place in Europe, and which may also be affected by the return emigration from the United States to Europe. The material, so far as it has been discussed, does not give a definite answer to this important question, the solution of which would require a series of parallel measurements taken in Europe."

Throughout his article he assumes that this statement, which is only an incident in my work, is the main thesis of my report.

I. METHOD OF MEASUREMENT

So far as I am aware the only objections raised against the method of measurement are those made by Mr Radosavljevich in the article quoted (pp. 419, 420, 423). He objects to lack of sharp definition of age, length of head, width of head, width of face, stature, and weight, data and measurements which are at present taken on the living according to uniform methods,—namely, age according to the usage of European languages as age at last birthday, the head and face measurements as maximum measurements, length of head from the glabella, stature and weight in stocking feet and without clothing,—unless different methods are specifically stated, as on pages 65 and 82 of my Final Report. Nobody misunderstands these methods, of which numerous examples may be found in anthropological literature. As a matter of fact Mr Radosavljevich

himself understands them, too, for on page 420 he speaks of length and breadth of head without any specification, assuming that the reader knows what he means.

Similarly his objection to lack of definition of physiological development (p. 423) is groundless. The statement (Partial Report, p. 34), "At the same time observations were made on pubescence as a means of determining the approximate physiological development. The method of these observations has been developed by Dr C. Ward Crampton," should make it clear to anyone that Dr Crampton's methods were followed. The description of this method is found in Dr Crampton's publications. Mr Radosavljevich might have read on page 33 that Dr Crampton himself organized the work in the schools.

More serious is the question of the accuracy of the observations. He states that "Bertillon, Martin, and other anthropometricians" (myself included) "require from their students an exactness for the length and breadth of the head within the limits of about 1 mm. If the difference is as much as 2 it is regarded as a discrepancy beyond which measurements cease to make identification of the subject measured possible, and if it is over 2, mistakes of a serious character are made beyond which non-identity can be made. The personal equation of Boas' thirteen observers who made successive measurements by way of preliminary practice on each other is in every observer above 0.5 mm." (p. 420). The last statement is incorrect. In reality the distribution of personal equations of the observers in regard to those head and face measurements was as follows (Final Report, p. 92):

0-0.4 mm.	31 times	2.0-2.4 mm.	1 time
0.5-0.9 "	29 "	2.4-2.9 "	- "
1.0-1.4 "	12 "	3.0-3.4 "	1 "
1.5-1.9 "	3 "		

Among these the two highest groups are represented by very few individuals only (17 for 2.2, 38 for 3.3), and the personal equations have therefore a very small weight.

Mr Radosavljevich distinguishes neither between error of

observation and personal equation nor between the effect of errors of observation upon an anthropometrical series and the effect of such errors upon measurements made for the purpose of identifying individuals. The personal equation is due to peculiarities in the method of measuring—like habitual differences in the choice of terminal points of the lines measured, or greater or lesser pressure. We try to eliminate these by practice, although they can never be entirely overcome. The error of observation is due to accidental errors affecting each measurement. While in measurements taken for the purpose of identification all errors *must* be restricted to a very low limit, equal accuracy is not *absolutely necessary* in measurements intended as a description of a series. We shall see later that most series can be adequately described by two values: the average and the mean square variability. In all these cases errors are admissible that do not influence either of these values beyond the limits of their accuracy. The mean square variability is determined as the square root of the average of all the squared deviations from the average; or, if the average is called a , the difference between any observation and the average x , the variability σ , the number of observations n , $\sigma = \pm \sqrt{\Sigma x^2/n}$, where Σx^2 indicates the sum of all the values of x^2 . Then the mean square error of the average may be expressed by $\epsilon = \pm \sigma/\sqrt{n}$.

According to the theory of probabilities this means that we may bet as follows, that the true average of an infinitely long series lies between

$a - \epsilon$	and	$a + \epsilon$	68	against	32
$a - 2\epsilon$	"	$a + 2\epsilon$	95	"	5
$a - 3\epsilon$	"	$a + 3\epsilon$	99.5	"	0.5

The accuracy of σ^2 is measured in the same way by the error of $\pm \sigma^2 \sqrt{2/n}$.

In a sufficiently long series an accidental error of observation has no effect upon the average. For the mean square variability σ_1 of the series which is affected by an accidental error of observation whose mean square is δ we have

$$\sigma_1^2 = \sigma^2 + \delta^2$$

The value of σ_1^2 will remain within the limits of its mean square error as long as

$$\delta^2 < \sigma^2 \sqrt{2/n}$$

$$\delta < \sigma \sqrt{2/n}$$

Thus we find the following admissible maxima for δ :

For $n = 100$	$\delta < 0.378\sigma$
$n = 200$	$\delta < 0.316\sigma$
$n = 800$	$\delta < 0.224\sigma$

For the length of head σ is about 6 mm. Therefore, the mean square error of observation which will still leave the variability within the limits of its mean square error is, for a series of

100 observations	2.4 mm.
200 "	1.9 "
800 "	1.3 "

Furthermore, a certain maximum value can be shown to exist for the exactness of anthropometric measurements. The process of rounding off to the nearest millimeter results in a mean square error of the variability of nearly ± 0.3 mm., provided the actual measures are evenly distributed over the fractions of millimeters. Taking further into consideration the varying consistency and the consequent unequal yielding to pressure of the soft parts covering the skull and zygomatic arches, and the irregularities of the form of the occiput with its sharp or irregular ridges, an exactness of more than ± 0.5 mm. is practically impossible to obtain. In individuals whose true measure lies on a half millimeter it will always be more, owing to the process of rounding off.

Considering the effect of rounding off, the following approximate mean square errors of the length of head result for the various observers, calculated from the table on page 85 of the Final Report:

Le. ± 0.4 mm.	M. F. ± 0.5 mm.
Br. ± 0.5 "	Ja. ± 0.5 "
O. S. ± 0.5 "	T. M. ± 0.5 "
Rp. ± 0.5 "	H. L. ± 0.5 "

Be.	± 0.7 mm.	L. W.	± 0.8 mm.
L. F.	± 0.7 "	Lu.	± 0.8 "
A. G.	± 0.8 "		

It thus appears that the accuracy is nearly the maximum attainable, and certainly entirely within the limits of the accuracy of the variability.

When it is the object of anthropometric studies to compare the variabilities of different series, this may generally be done without hesitation, so long as the increases of all the variabilities due to the accidental error of observation are the same, particularly since their accuracies are only slightly affected. A case of this kind occurs in our study in the discussion of heredity (pp. 153 et seq.).

The personal equations of the observers, given on page 92, are also without influence upon our results, since in the foreign-born and American-born of the same series care was taken to have the same observers represented with approximately the same relative frequency of observations.

Mr Radosavljevich also criticizes me (p. 415) for not measuring the height of the head, on account of the gratuitous assumption that it might have yielded more important results than other measurements. My reason is clear and simple: the measurement of the distance between vertex and ear, which has to be measured as a projection on the median plane of the body, is so inaccurate that I do not use it on the living. In this I am in the good company of other experienced anthropologists, like Professor von Luschan.

On page 424 he reproaches me for using a scale of colors of hair that I arranged myself, instead of using the colors of Fischer, which proved impracticable on account of their greenish tinges. In my Final Report a special chapter is devoted to this subject (pp. 93-98), in which I explain that my aim was a numerical determination of pigmentation, and a numerical determination of the increase of pigmentation with age, a study which had not been made before.

He also thinks there is no scientific reason for not using Martin's eye colors. Since these are too far apart to be used for numerical determination of pigmentation, and the classification results in

very strong personal equations in making estimates of colors. I preferred to omit eye colors from the study. For skin colors exposure to air and light causes such large variations in the individual that these also were excluded.

At the same place he objects to my making copies of the valuable anthropometric records that have been kept in the Newark Academy, without describing the method of measurement in detail. He claims that I give the blank on page 34. It has not been reproduced in my report, neither on page 34 nor elsewhere. He repeats correctly that I intended to use these records for the sake of studying American families settled in this country for several generations and living under more favorable conditions. Since these have not been treated in any of the tables of my reports, there is no cause for criticism just yet.

2. STATISTICAL PRESENTATION OF RESULTS

I have already pointed out that the errors in calculation which Mr Radosavljevich believes to have found are miscalculations on his part. He also calls attention (pp. 416, 417, and repeated as something new on p. 423) to discrepancies in the numbers treated in Table IV, pp. 17-19 of my Partial Report, which refers to the measurements of length and width of head, width of face, and cephalic index of groups of Hebrews born more or less than ten years after the mother's immigration. This discrepancy is due to the fact that, after the classification for the cephalic index had been made, the cards were arranged for other purposes. Later, when I decided to calculate the values for the absolute measurements, the same classification of the material was made once more. Owing to the necessarily arbitrary classification of those born just ten years after the mother's immigration (see Abstract, p. 34; Final Report, pp. 110, 111), it was impossible to repeat exactly the same classification. Since the validity of a statistical result does not depend upon the fact that the series compared contain the same individuals, this does not affect the study, and I did not feel particularly called upon to explain the differences in numbers which are obvious, since they are all contained in the same table. Since

I adopted later on a more satisfactory method of determining the influence of time elapsed since the immigration of the mothers (Abstract, pp. 44-46; Final Report, pp. 67-69, 108, 111, 113, 115), a recasting of these tables for the final report seemed particularly unnecessary.

An error in the count of 9-year-old American-born Hebrew boys has been pointed out by me on page 102 of the Final Report.

The other discrepancies to which Mr Radosavljevich refers on page 422 are the following:

	CEPHALIC INDEX	LENGTH OF HEAD	WIDTH OF HEAD
Table II, 1900-04, pp. 58-60	214 cases	213 cases	213 cases
Table II, 1890-94, pp. 62-64	162 "	161 "	163 "
Table III, 20 yrs. and over, pp. 68-72	764 "	763 "	763 "
Table IV, 14 yrs., pp. 78-82	24 "	24 "	23 "
Table IV, 18 yrs., pp. 78-82	65 "	66 "	67 "

In every one of these cases one observation has been thrown out for some valid reason, and it did not seem necessary to change the others because the result was not appreciably affected.

Mr Radosavljevich's difficulties in regard to the numbers measured (p. 421) would have disappeared if he had consulted the "Abstract," in which all the numbers of calculated observations are contained.

The numbers of Hebrews in the various series do not agree and can not agree (p. 421), because not all the necessary information for the varied statistical classifications can be obtained in every case, and cases without the necessary information naturally drop out of the particular series.

But to come to more important points. Mr Radosavljevich thinks that my considerations are based on "mere averages,—a method which has been condemned both in America and Europe," and, I may add, a condemnation to which I have added my liberal share. This question is intimately connected with the definition of what constitutes a biological type, and I must therefore say a few words on this trite topic.

Since all biological phenomena are variable phenomena, the biological type, i. e., all the individuals constituting a group, must be described by an enumeration of the frequencies of occurrence of all the variates constituting the type under discussion. The fact that anthropologists are in the habit of calling heads of a length-breadth index of 80 and more, brachycephalic heads, does not constitute brachycephaly a distinct biological type, but is a mere convenience of description. In the same way it is merely a convenience of description if we call a people a brachycephalic people in which the arithmetical mean of the head index falls in the group of brachycephaly, and in which also the majority of individuals are brachycephalic. The terms *dolicho-*, *meso-*, and *brachycephaly* have only a meaning as descriptive terms, not as biological types. Owing to this frequent misunderstanding and the erroneous opinion that these groups have really been proved to be distinct biological races, I have avoided for years these terms, notwithstanding their convenience, and speak only of more or less rounded, respectively, elongated heads. Mr Radosavljevich thinks that all the brachycephalic individuals in a certain people form a biological type, because the same conventional term is used to describe them, while in reality they are only a part of the whole series of variates of a type.

It will be understood that my remarks do not signify that there is no meaning in the distinct headforms which Retzius recognized with great acumen, thus laying the foundation of modern anthropology. The essential points are: that the arbitrary limits of the indices of 75 and 80 were invented only to classify conveniently the heterogeneous material; that the distribution of head indices in a people is a most important means of describing its characteristics; and that the fact that some individuals have an index lower than 80 and others higher than 80 does not prove that we are dealing with a mixed type. I shall speak of the question of mixed types later on, when discussing Professor Sergi's views (pp. 558 et seq.).

Bearing in mind the definition of a type, which is purely descriptive and contains no theory in regard to its homogeneous or multiple origin, we may apply what has been said above, that the

exact description of a type requires the statement of the exact relative frequency of occurrence of every form that belongs to the type; or, in case of a measurement, the accurate statement of the relative frequency of every measurement.

With the short series at our disposal this exact description is impossible to attain, for a determination of the exact distribution of frequencies would require for each series numbers of cases so large that ordinarily they do not exist in nature. The mean square error of a relative frequency p is

$$\epsilon = \pm \sqrt{p(1-p)/n}$$

If we find, for instance, that in adult foreign-born Hebrew males the cephalic index of 82 occurs 113 times among 764 individuals, or with a relative frequency of $113/764 = 0.148$, the mean square error will be

$$\epsilon_1 = \pm \frac{\sqrt{0.148 \times 0.852}}{\sqrt{n}} = \pm \frac{0.355}{\sqrt{n}}$$

Thus there would be left an error in a total series of

100 observations,	of 0.0355,	or about 24	%
900	"	0.0118,	" " 8 %
10,000	"	0.0035,	" " 2.4 %
40,000	"	0.0018,	" " 1.2 %
60,000	"	0.0015,	" " 1.0 %

For probabilities near 0.5 the result is a little more favorable, but distributions consist throughout of small probabilities for the value of each measurement.

These data show that an exact knowledge of the distribution of frequencies is practically impossible. If, however, a distribution exists which is characteristic of a certain type, then it is clear that each value which depends in a definite manner upon the distribution has a constant value. Since there is no reason for considering one observation as more valuable than another, it seems convenient to determine a value into which all observations enter in the same manner. Such a value is the average, or arithmetical mean. According to what has been said, the arithmetical mean has only one value for each type of distribution, so that it is impossible that

two series should be identical that have different averages. If the mean square variability σ of the series of n observations is determined, then the mean square error of the average is $\epsilon = \pm \sigma/\sqrt{n}$.

In the series of cephalic indices of adult foreign-born Hebrew males we find the average

$$\begin{aligned} a &= 83.0 \\ \sigma &= 3.2 \\ n &= 764 \end{aligned}$$

The error of a is therefore

$$\epsilon = \pm 3.2/\sqrt{764} = \pm 3.2/28 = \pm 0.11$$

According to the theory of probabilities (as has been stated on p. 537) we may bet in the following way that the true average is between the limits mentioned:

68	against 32	that it is between	82.89	and	83.11
95	" 5	" " " "	82.78	"	83.22
99.5	" 0.5	" " " "	82.67	"	83.33

It is therefore quite easy to mark the limits which determine that the difference between two averages is significant. If the difference between two averages is significant, the two series cannot possibly be the same. The average is therefore the first criterion for distinguishing two series. This is a purely arithmetical procedure and has nothing whatever to do with the interpretation of the average, which is not involved in the process.

Mr Radosavljevich's opinion that the change of an average does not imply a change of type is therefore fundamentally wrong. The reverse is the basis of all anthropometrical work.

Besides the average, the mean square variation σ fulfils the condition mentioned before, namely, that all observations are considered in the same manner. This value has been defined before (p. 537). The accuracy of this measure is determined by the error

$$\pm \sigma/\sqrt{2n}$$

The theory of probabilities shows that in series which are dependent on many accidental causes only, the two values a and σ , i. e., average and variability, give us the theoretical distribution of an infinitely long series. For instance, the value of

$$\alpha = 83.6 \quad \sigma = \pm 2.8 \quad n = 895$$

for the cephalic index of foreign-born Hebrew women (Partial Report, p. 82) gives us the following theoretical and observed frequencies (in per cent) of indices under 80, between 80 and 85, and over 85.

	OBSERVED	THEORETICAL	ERROR
< 80	6.7%	7.2%	± 0.8
80-85	55.5%	56.1%	± 1.7
> 85	38.3%	37.2%	± 1.6

For the cephalic index of foreign-born Hebrew men (Partial Report, p. 72) we find

	OBSERVED	THEORETICAL	ERROR
< 80	12.8%	13.6%	± 1.2
80-85	57.8%	55.4%	± 1.8
> 85	30.4%	31.0%	± 1.6

It will be noticed that these deviations are quite within the limits of errors that may be expected. The average and variability are thus seen to be not only in most cases an adequate expression of the whole distribution, but that they also give at a single glance a clearer impression of the character of the series than does the inconvenient tabular statement of the observed frequencies. It is entirely unjustifiable, as has already been stated, to assume that part of the series which lies under and over the arbitrary points 80 and 85 to represent distinct types.

I will discuss at this place the objection raised by Mr Hans Fehlinger¹ who claims that the total number of observations on which my results are based is inadequate. This I do not admit, since the summary table on page 56 of the Final Report (Abstract, p. 28), which has been drawn up for the purpose, shows that in most cases the differences between the foreign-born and American-born series are considerably larger than their mean square errors. The mean square error of the difference between two measures that have the individual errors $\sigma/\sqrt{n_1}$ and $\sigma/\sqrt{n_2}$ is $\sigma\sqrt{1/n_1 + 1/n_2}$, and their weight—corresponding to the number of observations—therefore

$$\frac{n_1 n_2}{n_1 + n_2}$$

¹ *Politisch-Anthropologische Revue*, Nov. 1911, x, no. 8, pp. 416-418.

By using this formula, the weights in the table referred to have been obtained, and we find the following approximate errors for the differences contained in the table:

	LENGTH OF HEAD	WIDTH OF HEAD	CEPHALIC INDEX	WIDTH OF FACE
Bohemians, Poles, Hungarians, and Slovaks				
Male	-0.6 ± 0.4	-1.8 ± 0.3	-0.8 ± 0.2	-1.6 ± 0.4
Female	-0.4 ± 0.4	-1.4 ± 0.3	-0.7 ± 0.2	-1.7 ± 0.4
Hebrews				
Male	$+2.2 \pm 0.24$	-1.8 ± 0.20	-2.0 ± 0.12	-1.1 ± 0.20
Female	$+1.9 \pm 0.37$	-2.0 ± 0.31	-2.0 ± 0.19	-1.3 ± 0.35
Sicilians				
Male	-2.4 ± 0.43	$+0.7 \pm 0.35$	$+1.3 \pm 0.21$	-1.2 ± 0.35
Female	-3.0 ± 0.50	$+0.8 \pm 0.42$	$+1.8 \pm 0.25$	-2.0 ± 0.42
Neapolitans				
Male	-0.9 ± 0.4	$+6.9 \pm 0.35$	$+0.9 \pm 0.20$	-1.2 ± 0.35
Female	-1.7 ± 0.55	$+1.0 \pm 0.46$	$+1.4 \pm 0.28$	-0.6 ± 0.46

All the values for which the probability of the result is more than 99,997 chances out of 100,000 have been printed in heavy type, those for which the probability is less than this amount, but more than 9,986 in 10,000, have been printed in italics. All these are, therefore, practically certain. The remainder might be considered as doubtful. Thus it will be seen that the length of head of the Bohemians and width of head of the Italians are the only doubtful measures. Length of head and width of face of Neapolitans appear also as certain when the measurements for males and females are combined.

Mr Fehlinger's claim that measurements of stature and head-form—which, he says, are exceedingly variable in almost all human types—lead more easily to errors than other measurements, I fail to understand. His statement that the individuals investigated are not of pure descent, but in part are children of parents of mixed nationality, is based on a misunderstanding of my work.

On the other hand, it might perhaps have been said that a psychological cause existed in the minds of the observers, which produced one personal equation for foreign-born and another for American-born. It is well known that an expected result may influence an observation. I think, however, the study of the

personal equations disproves this assumption. Besides this, the results among various types lie in different directions; the observers did not know what to expect; in many cases the statistical information was recorded by one observer, the measurements by another; and constant changes between foreign-born and American-born occurred in practice. All these make such a psychological explanation highly improbable. Here it must be considered as particularly important that the results agree with the previous observations by Ammon in Baden and Livi in Italy, which are, therefore, corroborative evidence of the accuracy of the results.

Here I must mention also the objection made by Sergi,¹ who considers the comparisons between parents and their own children as inadmissible on account of the small number of cases. He makes a rough comparison of the various series, merely counting the number of series of children of various ages in which the difference between parents and their American-born children exceeds that between parents and their foreign-born children, and vice versa. This is an inadmissible way of making the comparison. I have given these differences for Hebrew parents and children of all combined ages on page 124, and repeat here the results with their mean square errors.

Length of head	- 1.65 ± 0.26
Width of head	+ 1.52 ± 0.20
Cephalic index	- 1.60 ± 0.12
Width of face	+ 2.10 ± 0.20

It appears from this that these differences are also quite certain, their value being, in the case of the cephalic index, about twelve times that of its error. The probability that the differences in the two groups are due to chance, not to a definite cause, is infinitesimally small.

The differences in cephalic index between parents and their own American-born children, born less than ten years after arrival of the mother, and of those born more than ten years after the arrival of the mother, are, according to Table 18 (Partial Report,

¹ Il preteso mutamento nelle forme fisiche dei discendenti degli immigrati in America, *Rivista Italiana di Sociologia*, anno XVI, fasc. 1, Jan.-Feb. 1912, pp. 16-24.

p. 49, Final Report, p. 127) and the summary table 45, 2b (Final Report, p. 124), -1.37 and -1.97 respectively. Their difference is, therefore, 0.60 , with a weight, according to Table 18 just quoted, of 200 . This gives an error of $\pm 3.2/\sqrt{200}$ or about ± 0.22 , so that the significance of this difference is also quite probable.

Mr Radosavljevich is not at all clear in regard to the question whether the differences can be considered as significant or not. He says (p. 419): "Even the differences which Boas found between parents and their children are normal differences in degree, which may be the result of the countless errors in such delicate measurements, and other causes" (I presume by "normal" he means here accidental), and (pp. 417-418): "We believe that these" (he refers to the table of cephalic indices of individuals that have been born more or less than 10 years after the immigration of their mothers, discussed on pp. 540-1 of this paper) "and other methodological errors may be just the cause of the differences, and not the American soil and financial panics. Even by those minute deviations from the average it cannot be certainly inferred that the greater variation of the figures means that the Hebrew or Sicilian is undergoing a modification of the shape of the head on American soil." I have just given the proof that the differences cannot be explained by accident, and that inadmissible inaccuracies of measurement do not exist.

Another question raised by Mr Radosavljevich relates to the uneven distribution of types. He claims that in all anthropometrical investigations the numbers of observations must be made equal for all the groups compared. This is wrong. In every statistical phenomenon there is a natural relative frequency of classes which must be guarded if we are to attain results of value. This is true particularly during the period of growth, when according to the system of obtaining material a certain selection takes place. The ideal of measuring all the children is unattainable. In grammar schools, for instance in the fourteenth year, those who go to work and those who are already in high school are not measured. When measuring high-school pupils an entirely different group is taken, which is, on the whole, better developed than the pupils of the

grammar school. At the same time, American-born pupils are more numerous in the high school, so that the difference between the two groups of American-born and foreign-born would be accentuated by mixing the two groups. Evening clubs represent, again, a different population. By filling up gaps, therefore, exceedingly complicated elements are introduced. I mention the particular case of the 14-year-old children because it gave me considerable trouble in the initial stages of the investigation. I am even in doubt if in my series the school children and children measured at home are strictly comparable, and this was additional reason for giving up measurements in schools. By the way, Mr Radosavljevich is mistaken if he thinks that the material was collected almost entirely in schools. No girls to speak of were measured in schools, and the total number of school children measured does not exceed three thousand. The irregular distribution is, therefore, one of the concomitants of a naturally selected series.

I must mention here another misconception of Mr Radosavljevich which Professor Sergi seems to share. In speaking of the difference in distribution of head indices which he cannot explain away, Mr Radosavljevich says that differences in the distribution of headforms of American-born and foreign-born children exist, but that "*it is not known what the differences were in the parents of these two groups*" (p. 409). I have treated the possibility of such differences on pages 42-44 of my Partial Report. In order to overcome this possible objection, I have investigated on the one hand parents and their own children in order to obtain strictly homogeneous material; on the other hand I have compared immigrants of each year with American-born descendants of immigrants of the same year, a comparison which insures homogeneity of material.

As a matter of fact Mr Radosavljevich undoes the whole work of his criticism in saying, "The differences found by Boas, if they have any real meaning, may be regarded as the normal differences of separate groups, such as are frequently noticed in separate parts of the same people." My only problem is the ascertaining of the occurrence of such differences between separate parts of a people,

namely, immigrants and their American-born descendants. I presume Mr Radosavljevich's assurance that differences occur "normally" does not solve the problem of their occurrence?

3. INTERPRETATION

It may be due to the rather wide attention that has been given to my investigation by the daily press and a number of magazines, and the exaggerations that are found in these articles, that some investigators believe that I have claimed to have discovered the origin of a new American type. Here I may call to witness the critical Mr Radosavljevich, who certainly would have discovered this claim in my report if it were there. In fact, nothing can be farther from my thought, and the precise expressions in my later reports are due to my anxiety to avoid the possibility of such a misunderstanding. In the Partial Report the word "American type" does not occur. All I say is this: "The east European Hebrew, who has a very round head, becomes more long-headed; the south Italian, who in Italy has an exceedingly long head, becomes more short-headed; so that both approach a uniform type in this country, so far as the roundness of the head is concerned" (p. 7). Later, at the end of the discussion of the values of the cephalic index, I say, "The diagram shows very clearly that the two races¹ in Europe are quite distinct, but that their descendants born in America are very much alike" (p. 9). I might have added again "as far as the roundness of the head is concerned." Since, however, the diagram refers to nothing else, and the remark appears in the further elaboration of the thesis quoted before, I omitted the restatement of this restriction. Again, on page 50 of the Partial Report, I say, "The effect of these changes is the development of a greater similarity of the descendants of Sicilians and Hebrews, one to the other," a statement which is strictly correct, since only the cephalic index is referred to, and not by any means identical with the claim that both develop into one human type. I may also point out that in a popular article by Mr Hendricks, published in

¹ The term "race" was here, as in other places, introduced by the Immigration Commission. I had used the term "type."

McClure's Magazine, the only one that I had a chance to revise, the term "American type" is carefully avoided. Furthermore, in 1909, while the investigation was in progress, I disclaimed explicitly the probability of the development of an American type.¹ I will state here once more, that all I believe that has been proved are changes in various directions and of limited extent; in how far these changes may be progressive or limited by hereditary racial form, remains to be seen (Abstract, p. 53; Final Report, p. 76).

Mr Radosavljevich's criticism of what he calls my interpretation is difficult to discuss, because it seems to me that he has failed to grasp the meaning of older researches which he thought it worth while to recapitulate in connection with our problem, while he has certainly not understood my report. He constantly confuses two entirely distinct problems: the physical characteristics of the immigrants who arrive in America (for instance on pp. 394, 395), and the relation between the bodily form of foreign-born immigrants and their American-born children. As stated before, the former question has a bearing upon the latter, but has been treated only in so far as it had to be eliminated as a possible source of error. I say (Partial Report, p. 30): "The important problem of the selection which takes place during the period of immigration, and which is indicated by the change of type of immigrants after the panics of 1893 and 1907 . . . has not been studied." Nevertheless, Mr Radosavljevich thinks this is the fundamental problem (p. 395).²

I fear that his summary of theories in regard to changes of the form of the head does not throw much light on the question. He distinguishes:

1. A mechanical-functional theory, according to which such elements as the use of the temporal muscles, premature synostosis of sutures, etc., influence the form of the skull.

¹ *Science*, n. s., vol. XXIX, no. 752, May 28, 1909, p. 843.

² At this place he calls attention to the fact that, according to my tables, after 1893 stature, length and width of head, and width of face—that is, all the absolute measurements—decreased; while the cephalic index—a ratio—increased. This he considers a contradiction of my statement; but on the same page Mr Radosavljevich quotes me correctly as saying that all the absolute measurements decreased. So what has the cephalic index to do with this question? Or does he consider it an absolute measurement?

2. The hereditary theory in the following three forms:

- (a) The form of the head of each race has remained constant since very remote periods. In his imposing array of authorities Mr Radosavljevich has forgotten the most pronounced advocate of this theory, J. Kollmann.
- (b) The shape of the head is inherited, but it does not assume its final shape until after birth, and it does not depend on the mixed parental value of the cephalic index.

Here two entirely disconnected points are joined, the former of which has nothing whatever to do with the question of heredity. I fail to see what the literature quoted has to do with the "theory" as here pronounced. The quotation of Ranke as disproving my own investigations on heredity does not relate at all to the point at issue,—namely, the question of mid-parental versus alternating inheritance,—since Ranke does not touch upon the similarity between parents and children at all, the question which I treated. On the other hand, he does not mention Pearson's criticism of my paper,¹ nor the whole literature on Galtonian inheritance, Mendelism, and alternating inheritance, which belongs here.

- (c) The third "form of the hereditary theory claims that the *shape of the head* (or rather skull) *is inherited*, but heredity means not always absolute stability."

This, again, has nothing to do with the case, since it is merely a statement of the phenomenon of variability. Hrdlička, the only author he quotes, gives in the passage cited merely a somewhat lengthy statement pointing out the well-known fact that each individual has his own particular characteristics—hardly a theory of heredity.

3. The geographical-local theory.

Here he confuses again two entirely distinct phenomena: the phenomenon of local types which may be due to permanence of racial traits, and the unifying effects of environment.

In the whole enumeration the real questions at issue are almost entirely overlooked. These are based chiefly on the questions of (1) Hereditary influences, which include (a) the transmittal of acquired

¹ *Zeitschrift für Morphologie und Anthropologie*, 1904, VII, pp. 524-542.

characters, (b) Mendelism, versus mid-parental and alternating inheritance, (c) the stability of characters and the origin of sports; (2) Selection; (3) Environmental influences, such as climate, altitude, and other geographical features, and social environment. An analysis of the phenomena of the last class must always lead ultimately to functional changes which determine the observed modifications of form.

Against the characterization of "Boas' theory as environmental-economic" (p. 405), I protest as based on a hopeless muddle of two distinct problems that have no relation whatever, namely, that of selection of immigrants according to economic conditions, and that of the changes in bodily form of the descendants of immigrants (see also above, pp. 535, 551).

To this confusion may also be attributed the criticism that my method of collecting data was not "*individualistic* but *collective* ('generalized,' *en masse*) in nature. This means that Boas did not study the effect of 'American soil' and 'financial panics' on the *same* individuals during a period of time representing the age of his subject (4 to 20 years 'and over') but he collected this data in a very short period, measuring a large number of immigrants" (p. 420). I should like to know how the effect of selection of immigrants in Europe can be studied individually; or how we are to trace the individual development of an American-born child in comparison with the same individual as a foreign-born child, for unless that can be done the method of following up the growth of each child does not help us to overcome the suspicion that there may be a different composition of the two series; and why quote all the observations on page 407 as significant if the generalizing method is not applicable? Mr Radosavljevich should at least be consistent and discard practically the whole anthropometry of growth, except some of my own and Dr Wissler's work. In the present case the individualistic method consists of a direct comparison of parents and their own children, and this I have used to the fullest extent.

I believe there is no need of occupying more space with a refutation of Mr Radosavljevich's criticisms. I shall be glad if "the

unexpected scientific results should be sifted by those who at least know the immense difficulties in attacking such complicated problems" (p. 405). Mr Radosavljevich does not know them.

I turn to the question of the interpretation of my observations and wish to repeat, first of all, my own conclusions. Starting from the observation that changes in the values of the averages occur at all ages, that these are found among individuals born almost immediately after the arrival of their mothers, and that they increase with the length of time elapsed between the arrival of the mother and the birth of the child, I have tried to investigate various causes that might bring about such a phenomenon. I have, as I believe, disproved the possibility that the difference between the two groups of American-born and foreign-born may be due to differences in their ancestry. This objection has been raised by Professor Sergi.¹ As mentioned before, the comparison of parents and their own children, and the comparison between immigrants who came to America in one particular year and the descendants who came to America in the same year, seem to me to eliminate entirely this source of error, which has been considered by me in detail.

Less satisfactory is the attempted proof of the theory that the cradling of infants has no influence upon their headform. The fact remains that among the Hebrews there is a radical difference in the bedding and swathing of infants born abroad and of those born here. Against this fact may be adduced the other one that no such radical difference in the treatment of children exists among the Sicilians, and that, nevertheless, changes occur and that these are in a direction opposite to those observed among the Hebrews. Even more unfavorable to this theory are the changes in width of face among Bohemians which develop among immigrating children who are no longer subject to such mechanical influences. I consider a further investigation into the influences of the method of bedding children desirable.

It also occurred to me that illegitimate births of children whose fathers were Americans might bring about changes. I have

¹ Loc. cit., largely reprinted by Radosavljevich in *Science*, May 24, 1912, pp. 821-824.

disproved this assumption by proving that the degree of similarity between American-born children and their reputed fathers is as great as that between foreign-born children and their fathers (Abstract, p. 51; Final Report, pp. 154 et seq.). Besides this the social conditions of the Hebrew, Italian, and Bohemian colonies are not at all favorable to such an assumption. This point has been raised again by an anonymous English critic,¹ without, however, referring to my discussion of the question and the answer given by me.

After disposing of these points which would give the phenomenon an accidental character, without deep biological significance, I have taken up the biological problem itself, and first of all have called attention to the parallel observations by Ammon and Livi and suggested that the changes observed by them as occurring between urban and rural populations may be due to the same causes as those observed in the descendants of immigrants. If this be true, then Ammon's interpretation of the phenomenon as due to selection, and Livi's as due to the more varied descent of urban populations which makes them deviate from excessive values to more median values, must be revised.

I have also referred to the possibility that the breaking of the more or less inbred lines of small European villages after arrival of the people in America and the consequent change in the line of descent may be a cause producing changes in type.

Finally, I have pointed out that the changes can be accounted for by a process of selection only, if an excessively complicated adjustment of cause and effect in regard to the correlation of mortality and bodily form were assumed—so intricate that the theory would become improbable on account of its complexity.

It will, therefore, be seen that my position is that I find myself unable to give an explanation of the phenomena, and that all I try to do is to prove that certain explanations are impossible. I think this position is not surprising, since what happens here happens in every purely statistical investigation. The resultant figures are merely descriptions of facts which in most cases cannot be discovered

¹ *Edinburgh Review*, CCXV, p. 374, Jan.-Apr. 1912.

by any other means. These observations, however, merely set us a biological problem that can be solved only by biological methods. No statistics alone will tell us what may be the disturbing elements in intra-uterine or later growth that results in changes of form. It may be that new statistical investigations in other types of environment may give us a grouping of these phenomena which suggests certain groups of causes, clues that can then be followed up by biological methods,—it is certainly asking too much to expect the solution of this problem from *one* series of observations. I at least am more inclined to ask for further material from other sources than to force a solution that must be speculative.

This defines my position toward the criticisms of Gaston Backman¹ and Giuseppe Sergi. The former claims that the explanations given by Ammon are adequate, and simply identifies my observations and his. He overlooks the all-important difference that I have compared parents and their own children, a method which introduces an entirely new point of view and practically disproves Ammon's claim that these changes are due to natural selection. I should like to say here that I have always considered Livi's theory as the most plausible explanation of the European observations, and still think that it must be a strong contributory cause, although it is not applicable to our series and for this reason can no longer be considered as explaining the whole phenomenon. Backman's views are, it seems, not in accord with the results of our inquiry. He states: "The causes underlying the alteration will then have to be sought in factors of selection that may be of the most divergent nature. When, nevertheless, Boas wants to maintain that he by his researches has proved the plasticity of human races, this conclusion seems to me to carry further than the facts in question will permit. It seems, on the contrary, to me to be quite plain that it is the change from country life to city life that has been the fact of real importance in the matter of the alterations which the descendants of the immigrants have undergone, and not the special American conditions. The point of weight must be sought in those conditions which the changes from country life to city life carry with

¹ *Ymer*, 1911, pp. 184-186.

them." I have shown that selection is extremely unlikely to bring about the results observed. That the essential causes may be the city conditions is possible, but not proven. I have not ventured to claim that I have discovered these causes. Besides, what would it help us if we assign the phenomena to city life, since the manner of its influence is as obscure as that of any other cause? I may quote here from my "Abstract" (p. 52), which Mr Backman reviews (also Final Report, p. 75). When speaking of the differences between urban and rural types, noted by Ammon and Livi, I say: "Our American observations show that there is also a direct influence at work" (in so far as the differences occur also between parents and their own children, in which case selection is highly improbable and mixture excluded). "Ammon's observations are in accord with those on our American city-born central Europeans; Livi's, with those on our American city-born Sicilians and Neapolitans. Parallel observations made in rural districts and in various climates in America, and others made in Europe, may solve the problem whether the changes that we have observed here are only those due to the change from rural life to urban life. From this point of view the slight changes among the Scotch are also most easily intelligible because among them there is no marked transition from one mode of life to another, most of those measured having been city-dwellers and skilled tradesmen in Scotland, and continuing the same life and occupations here."

As long, then, as we do not know the causes of the observed changes, we must speak of a plasticity (as opposed to permanence) of types, including in the term changes brought about by any cause whatever—by selection, by changes of prenatal or postnatal growth, or by changes in the hereditary constitution of the individual. It is quite arbitrary to restrict plasticity to the last-named cause, as Mr Backman seems to do. In order to avoid this impression I have used expressly the term "instability or plasticity of types" (Abstract, p. 53).

Prof. R. S. Steinmetz¹ suggests that the observed changes may

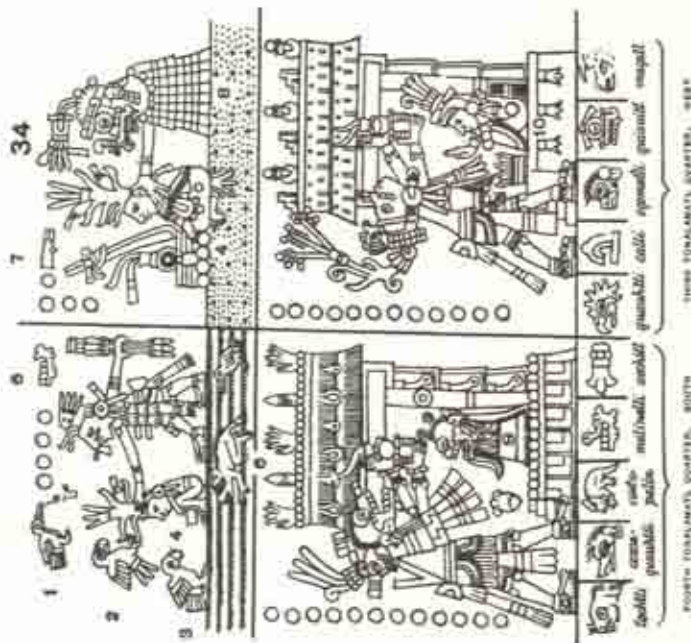
¹ Het nieuwe Menschenras in Amerika, *Nederl. Tijdschrift voor Geneeskunde*, 1911, pp. 342-352.

be due to the elimination of degenerate types that develop under the unfavorable European conditions and are, therefore, a reversion to the better developed old types. I do not consider this likely, because the conditions under which the immigrants live are not favorable; but this suggestion is worth following up as one of the possible contributory causes.

In personal conversation it has also been suggested that the lowering of the head index might be due to the increase in stature which occurs in America. I have myself pointed out that the cephalic index tends to decrease with increasing stature, because the correlation between all antero-posterior measurements,—in this case length of head and stature,—is closer than the correlation between these and transversal measurements. This relation, however, occurs only in a group which has been treated as a statistical unit. As soon as the groups are classified from distinct social or racial points of view, it ceases. This question has been treated by E. Tschepourkowsky.¹ It is clear that the same relation cannot be expected between stature and head measurements in a group which contains individuals of only one selected stature, as in a group in which all statures are increased owing to some cause that affects the whole group, and which may affect other measurements in peculiar ways.

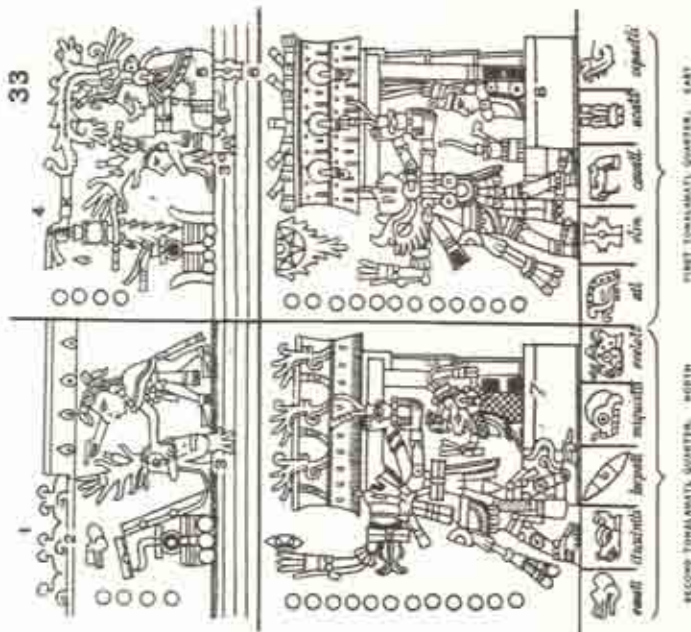
Professor Sergi criticizes my views from the standpoint that he considers sudden changes in germplasm in new surroundings impossible and tries to reduce the phenomenon entirely to one of varying composition of the series, that is, if we follow his ideas out, to a differing fertility or mortality of component types of the immigrants. If his remarks, as it may seem, should indicate that he considers brachycephalic, mesocephalic, and dolichocephalic individuals as distinct types, the criticisms made before hold for his view also. His is an attempt to explain the phenomena by natural selection, the success of which, as said before, I consider as extremely doubtful. The particular form in which it is presented by Professor Sergi is based on his method of analyzing the somatological types constituting a people. I cannot consider his method as fruitful, since

¹ *Biometrika*, IV, pp. 286-312.



DEITIES OF THE FOUR QUARTERS.

1. *Tzatzitli*, Jadehawk. 2. *Atla*, Azura. 3. *Cochco*, Parrot. 4. *Tzatzitli*, Maize plant. 5. *Quimicéhu*, Mouse. 6. *Mallinalli*, Twisted. 7. *Moyatl*, Deer. 8. *Tzalo*, Rain God. 9. *Micéhuicéhu*, Lord of Hades. 10. *Centéotl*, Maize God.



FROM THE CODEX FEJERVARY-MAYER.

1. *Itzamal*, Heaven. 2. *Écatl*, Wind. 3. *Tzatzitli*, Maize plant. 4. *Tzalo*, *yanitl*, Oupouring of Water. 5. *Chicéhuicéhu*, Water-Godless. 6. *Ólm*, Motion. 7. *Tzatzitl* (see *Itzamal*), Coal of Stone, of Punishment. 8. *Tzatzitl*, Sun God.

the analysis which he demands is impossible. If we establish a number of arbitrary types it is always possible to analyze a series of observations accordingly, but this analysis does not prove the correctness of our subjective classification and the existence of the selected forms as types, but is due merely to the fact that the distribution of observations *can* be made according to any fitting theory; but the correctness or incorrectness of the theory can be proved only in exceptional cases. I will give a definite example:

I can assume that the east European Hebrews, who have a variability of ≈ 3.2 , consist of three elements, which have the characteristics that one element has a cephalic index ranging about 86, another one an index ranging about 83, and a third one an index ranging about 80. If, furthermore, I demand for each an equal variability, and assume that each series as well as the averages of the first four powers of the observed series follow the exponential law, the following composition results:

Variability of each series ≈ 2.7 .

Number of cases of the series ranging about the index 83 four times the number of cases of series ranging about the indices 80 and 86 respectively.

The theoretical distributions for the homogeneous and compound series, and the observed series, for 764 cases, are given in the accompanying table. It will be seen that both series are so much alike that the one represents the observed series not appreciably better than the other.

If we analyze several series of this kind whose averages differ, making the assumption that they are composed of three equidistant elements of equal variability, the observed result can be obtained only by unequal frequencies of the constituting elements. If we call the variability of the observed series v , that of the component series σ , the distances between the averages of the component elements d , that between the observed average of the whole series and the middle component group d_0 , and the number of occurrences of the series with smallest average n_1 , of that with the middle

Cephalic Index	THEORETICAL VALUES		OBSERVED VALUES
	Homogeneous Series	Compound Series	
71	—	—	3
72	—	—	—
73	1	1	—
74	2	1	1
<hr/>			
75	4	4	2
76	9	8	9
77	17	16	13
78	28	26	28
79	45	44	42
<hr/>			
80	61	61	57
81	77	80	77
82	89	94	113
83	98	95	99
84	89	94	76
<hr/>			
85	77	80	77
86	61	61	67
87	45	44	41
88	28	26	21
89	17	16	22
<hr/>			
90	9	8	7
91	4	4	7
92	2	1	1
93	1	1	1

average 1, of that with the highest average n_2 , we can show, under the assumptions made before, that

$$\begin{aligned}
 n_1 + 1 + n_2 &= 3(d^2 - d_0^2)/2(d^2 + d_0^2), \\
 n_1 &= \frac{1}{2}d[(n_1 + n_2)(d - d_0) - d_0], \\
 r^2 - \sigma^2 &= \frac{1}{2}(d^2 - 5d_0^2).
 \end{aligned}$$

According to these formulas the composition of the series would change very rapidly with small changes of the average. For instance:

598 Bohemian foreign-born females have the average index 84.6 ± 3.2

211 Bohemian American-born females have the average index 84.3 ± 3.3

If the constituent elements of these series have the averages 81, 84, and 87, then the constituent elements would occur with the following frequencies per hundred:

SERIES	81	84	87	σ
Foreign-born	3	74	23	≈ 2.8
American-born	11	68	21	≈ 2.7

Such rapid changes in the composition of the series, due to very slight and therefore uncertain changes of the averages and the consequent asymmetries, do not seem at all plausible. It may also be pointed out that in the case here discussed the difference of the average must not be more than ≈ 0.72 , in order to make the analysis possible.

In other words, if the theory of a compound origin of the series is to be maintained without other evidence than that contained in the distribution of observations in the series, it must be proved that the shifting of the average is associated with certain types of skewness. It may also be pointed out that in most cases in which the series can be proved to be compound, disturbances of the correlations between various measures will be found¹ that may corroborate or disprove the theory. In our series there are indications neither of significant asymmetries nor of disturbances of correlations.

It follows from all this that it is inadmissible to attempt an analysis on an arbitrary basis, unless proof can be given that the supposed constituent elements have biologically separate origin. The greater the number of types that are to be segregated, the more arbitrary becomes the method, and almost any analysis according to a sufficient number of types *can* be made. There are, of course, distributions that demand an analysis—like von Luschan's bi-modal curves of Asia Minor, or my own for width of face of half-blood Indians, and others,—but there must be strong internal evidence of a compound character, and even then the analysis will be arbitrary if the component types are not known. This is perfectly evident if we realize that each type must be defined by at least three constants,—average, variability, and relative frequency,—so that for two component elements five constants must be determined (one value of the relative frequencies being determined by the relative

¹ See F. Boas, *The Cephalic Index*. *American Anthropologist*, n. s., vol. 1, 1899, pp. 448-461.

frequency of the remaining series), for three elements eight, etc. The greater the number of constants to be determined, the better can the theoretical and observed series be made to coincide, almost regardless of the correctness of the theory which is expressed by the constants.

I conclude from this that the claim that the change must be explained by a different composition of the series of American-born is inadmissible, because it is an entirely arbitrary solution of the problem.

I repeat that I have no solution to offer, that I have only stated the results of my observations and considered the plausibilities of various explanations that suggest themselves, none of which were found satisfactory. Let us await further evidence before committing ourselves to theories that cannot be proven.

Finally, a few words on the opinion that has been expressed or implied, that our observations destroy the whole value of anthropometry, in particular that the study of the cephalic index has been shown to have no importance. It seems to me, on the contrary, that our investigations, like many other previous ones, have merely demonstrated that results of great value can be obtained by anthropometrical studies, and that the anthropometric method is a most important means of elucidating the early history of mankind and the effect of social and geographical environment upon man. The problem presented by the geographical distribution of headforms,—for instance, of the cephalic index,—has not been solved by our inquiry. All we have shown is that headforms may undergo certain changes in course of time, without change of descent. It seems to my mind that every result obtained by the use of anthropometric methods should strengthen our confidence in the possibility of putting them to good use for the advancement of anthropological science.

COLUMBIA UNIVERSITY

NEW YORK, August 6, 1912

PROCEEDINGS OF THE ANTHROPOLOGICAL SOCIETY OF
WASHINGTON

Meeting of October 24, 1911

THE 455th regular meeting of the Society was held in the new building of the National Museum. The first paper read was by Mr James Mooney, on Indian Survivals in the Carolinas.

Mr Mooney gave a brief account of his summer's work with the Eastern Cherokee on their reservation in the mountains of western North Carolina, and with some mixed-blood survivors, locally known as Croatan Indians, in the eastern part of the State. The Eastern Cherokee, numbering about 2,000, are descendants of those who fled to the mountains when the body of the tribe was removed to the Indian Territory in 1838. They still retain most of their aboriginal customs and beliefs, together with their language, although the larger tribal ceremonies are nearly obsolete.

The Croatans, so-called from an attempt to identify them with Raleigh's lost colony of 1585, are centered chiefly in Robeson county, to the number of about 8,000 according to the last census, with bands in adjoining counties and in South Carolina. They appear to be descendants of the original native tribes of the same region, largely mixed with alien blood, the Indian blood still predominating, although they have completely lost all knowledge of Indian customs, language, and tribal names. They are intelligent and prosperous people, farmers and small tradesmen, fully up to the level of their white neighbors. They have official recognition from the State as Indians, with a separate school appropriation; they also support a small paper called *The Indian Observer*, devoted to their interests.

Mr F. W. Hodge gave an account of the archeological researches conducted in behalf of the Bureau of American Ethnology in conjunction with the School of American Archaeology in a large ruin, known as Kwasteyukwa, on a mesa overlooking the Jemez valley in New Mexico. Certain of the pottery found shows relationship with that of Sikyatki, a prehistoric pueblo of the Hopi of Arizona. Intrusive objects also were found, indicating the comparatively modern occupancy of the village, which was built on the walls of an older pueblo.

Mr Hodge also exhibited a series of paper squeezes and a plaster cast of one of them, made during an expedition to El Morro, or Inscription Rock, in western New Mexico. This rocky prominence, on the ancient trail to Zuñi, was a camping-place of the early Spanish explorers and missionaries, many of whom inscribed their names and also the object of their visit. About twenty squeezes were made of inscriptions ranging in date from 1606 to the eighteenth century. These inscriptions shed much light on early Pueblo history.

Dr P. Radin spoke on *Some Archeological Problems of the Winnebago*. Dr Hrdlička suggested that the character of the skulls found in the Wisconsin mounds should be taken into consideration by the speaker.

Meeting of November 14, 1911

THE 456th regular meeting of the Society was held in the new building of the National Museum. The address of the evening was by Dr W J McGee, on *Conditions Limiting the Growth of Population in the United States*. Dr McGee's presentation was an elaboration of his paper in *Science* (October 6, 1911, pp. 428-435).

Meeting of January 16, 1912

THE 457th regular meeting of the Society was held in the new National Museum building. The speaker was Dr J. W. Fewkes, who lectured on *The Western Neighbors of the Prehistoric Pueblos*, illustrating his remarks with lantern slides. The early Spanish discoveries, he said, designated the habitations of the sedentary Indians of the Southwest by several names, as pueblos, casas grandes, rancherías, and trincheras, the word "pueblo" being especially applied to a compact several-storied community house of terraced form represented most abundantly along the Rio Grande in New Mexico. The large houses on the Gila they called "casas grandes," and they gave the name "rancherías" to an aggregation of fragile-walled dwellings made of brush and clay supported by ribs of wood. Defensive walls were called "trincheras". Each of these names indicates a distinct architectural type, although they were not used with accuracy. In late years all ruined buildings in the Southwest, especially those independent of cliffs, have been called pueblo ruins, the culture of the people that once inhabited them being designated the Pueblo culture. It is well to preserve the term pueblo for a group of the compact, terraced, many-storied buildings to which it was originally applied; this done, the distribution of the pueblo type in our Southwest is considerably

restricted. The stone ruins ascribed to the ancient sedentary inhabitants of Arizona from the upper Verde westward to the Colorado are not true pueblos. In this region there predominated great, massive, stone forts and fragile-walled houses with stone foundations, a duality everywhere evident. The indications are that both kinds of buildings were constructed and used at the same time and by the same people. The forts, situated on almost inaccessible hilltops, were places of refuge, while the less substantial buildings on the river terraces were habitations near aboriginal farms. The great number of these forts on the western border of the Pueblo region implies a necessity for defense along the entire western boundary of Arizona and Sonora.

Dr Fewkes gave a brief account of the different forts and terrace dwellings on the upper Gila and its tributaries, Sycamore and Granite creeks, the Chino and Williamson valleys, and Walnut creek to the mouth of the Santa Maria and other tributaries of the Colorado, all examples cited substantially agreeing in the duality of architectural type and the absence of true pueblo structure.

The simple construction of the forts and the rude character of the masonry, of undressed stone without mortar, was referred to. Views of the remains of rancherías on the river terraces were shown and described. Terrace sites indicated by rectangular and circular lines of stones and low mounds occur all along the Chino and Walnut valleys to Aztec Pass. These show no evidences of kivas, or sacred rooms, or of many-storied dwellings. The pottery found near them is rude, sometimes decorated; the pictography is characteristic; the people made extensive irrigation ditches.

The most important forts mentioned were those on the upper Verde, near Chino, and on the limestone ridge west of Jerome Junction. Two important forts (one situated near the mouth of Walnut creek and the other at Aztec Pass, the latter being the "pueblo" first described by Lieut. Wheeler) were referred to by the speaker. Big Burro creek and other streams west of Aztec Pass have forts overlooking enormous cañons of great scenic interest.

The geographical distribution of the forts in western Arizona corresponds generally with the northern extension of the Yuman stock, according to Powell's linguistic map. The country west of the Verde valley in which the ruins occur was peopled by Yavapai, Walapai, Havasupai, and other Indians called "Apaches" by José Cortez. The Havasupai, who now live in the depths of Cataract cañon, and the Walapai are said to have legends that their ancestors constructed some of the

buildings described. The Hopi dwelling in Oraibi pueblo claim that certain of their clans came from the west and that they are of Yuman stock. The question of the kinship of the ancient builders is of interest to the physical anthropologist as well as to the philologist and the student of culture-history. As Indians of the Yuman stock formerly extended to the Pacific, the possible kinship of the western neighbors of the Pueblos to tribes of southern California is significant.

Dr Aleš Hrdlička, in discussing the address, said that the results of the direct study of man himself in the region west of the Pueblo area agree in large part with the conclusions reached by Dr Fewkes, but in part they also differ. It is possible that the region about and west to southwest of Aztec Pass was once occupied by either the Mohave or the Yuma. The people against whom they had to defend themselves, however, were more probably the Apache. The Walapai and Havasupai, who today speak the Mohave language, are physically Apache, and the same is true of the Yavapai. As the Apache type is a very distinct one, this conclusion is quite definite. Both tribes contain, of course, some Mohave and probably also Pueblo admixture.

Dr Hrdlička showed a series of views of Havasupai and Walapai huts that are related to those of the Apache but which are totally distinct from those of the Mohave and the Yuma, and numerous types of men and women from the several tribes, showing great resemblance between the Walapai and Havasupai and the Apache, while the Mohave resemble the Pueblos much more closely.

Mr George R. Stetson addressed the Society on the Code of Hammurabi. His remarks showed how humanitarian the code was, and what an advance it was on Roman law in several respects, though antedating the latter by centuries. The speaker also demonstrated how the laws of various states of the Union and of certain foreign nations might well be advantageously amended on the lines of the code under discussion.

Meeting of February 6, 1912

THE 458th regular meeting of the Society was held at 4:45 o'clock in the new building of the National Museum. The speaker was Prof. Mitchell Carroll, secretary of the Archaeological Institute of America, who delivered a lecture on The Excavations at Knossos. It was pointed out that Sir Arthur Evans' excavations in Crete since 1900 have added a new horizon to European civilization. The discoveries at Knossos, the capital of the Sea Empire of old King Minos, cover a period of more than two thousand years, embracing the third and second millenniums

before Christ, which is now known as the Minoan or Bronze Age of Crete, beginning with the end of the Stone Age with the introduction of bronze weapons and tools, and ending with the incoming of iron. Dr Evans divides this into nine Minoan periods, the last of which corresponds with the Mycenaean Age revealed through the discoveries of Dr Schliemann at Troy and Mycenae.

Professor Carroll, with the aid of stereopticon views, described in detail the palace of Minos excavated by Dr Evans, and brought these discoveries into close relation with the legend of Theseus and the Minotaur, and the historical references to Crete in Thucydides and Herodotus, showing that it was the cradle of Greek civilization. The palace itself was the labyrinth, and the Minotaur was the Greek personification of the bull-grappling contests popular at the royal court, in which were sacrificed the youths and maidens brought as tribute from conquered states. Athens was at one time subject to Crete, and Theseus, one of its legendary kings, doubtless regained its liberty and started it on its eventful history.

Meeting of February 20, 1912

ON February 20, at 8 o'clock, the retiring president, Dr J. W. Fewkes, delivered an address in the lecture hall of the new building of the National Museum, on Great Stone Monuments in History and Geography. Dr Fewkes' paper will be published in full in the *Smithsonian Miscellaneous Collections*.

Meeting of March 12, 1912

THE 459th regular meeting of the Society was held in the new building of the National Museum at 4:45 P. M. Miss Frances Densmore read a paper on the Sun Dance of the Teton Sioux. Miss Densmore's study was conducted in a series of councils to which the old leaders of the tribe came from a radius of about a hundred miles. Fifteen reliable men were selected to give the account of the sun dance, their authority being established by interviews with about forty members of the tribe, in widely separated localities. Those who took part in the sun-dance councils were men who bore upon their bodies the scars of their participation in the sun-dance tortures, and among them were the man who acted as intercessor in the ceremony and the man who performed the cutting of those who fulfilled vows, both men being the only Tetons living who had thus officiated. The men comprising the sun-dance council, with Miss Densmore and an interpreter, visited the site of the last sun dance held by the Teton Sioux in 1882, the site being identified by the Indians. The

place where the sun-dance pole was erected, the outline of the "shade-house," and the location of the "sacred place" were recognized, and measurements showed them to be correct, according to the usual plot of the sun-dance grounds.

The sun dance was held annually by the Sioux and was distinctly a religious ceremony. The fulfilling of vows of torture was an important part of the ceremony, the vows having been made by men in danger on the warpath. When making the vow they asked for a safe return and that they might find the members of their family alive and well, and the fulfilment of the vow was required whether the prayer was granted or denied.

The paper was illustrated with songs of the sun dance which had been recorded by the phonograph and were played on the piano. Many of these were ceremonial songs and known only to the man who sang them for the lecturer. One of these men has died since the songs were recorded. A collection of old ceremonial articles used in the sun dance was exhibited.

Meeting of April 10, 1912

THE 460th regular meeting of the Society was held April 10, at 4:45 P. M., in the new building of the National Museum. The speaker of the afternoon was Dr Henri Pittier, the subject of whose address was Notes on the Native Tribes of Panamá, with all of whom he came in contact in the course of his travels.

There is much confusion current as to the number of the so-called tribes and the stocks to which they are related. The numerous names recorded correspond, in fact, not to distinct tribes, but merely to villages, names of chieftains, or, in a general way, to what the Spanish chroniclers designated as "parcialidades."

At the present time there are east of the Canal Zone only two distinct "nations," viz., the Cunas, or Cuna-Cuna, to which the San Blas Indians belong, and the Chocoos to the south, beyond the Tuyra river. The line that separates these two stocks is at the same time the ethnological boundary between South America and Central America.

The Cunas are a numerous and strong people, almost uniformly of short stature and broad-shouldered. They are very jealous of their independence, and shun all interference on the part of strangers, including the Panamanian government, the authority of which over them is only nominal. The Cunas of the northern coast, east of Nombre de Dios, or San Blas Indians, are far above the other Panamanian aborigines in their social and economic development; they constitute one of the best elements

of the population included in the territory of the young republic, being thrifty and enterprising and having made of their extensive cocoanut palm plantations a real source of wealth. The remaining Cunas, known as Bayanos, Chucunacas, and Payas, live in the interior and are less advanced, the former two groups being acknowledged as real "Indios bravos." All speak one language, with slight local variations.

The Panamanian Chocoes are the northernmost branch of a numerous stock which extends more or less continuously along the Pacific coast of South America, from Punta Grachine in Darien to the Ecuadorian boundary. In the Sambú valley, where Dr Pittier found them, they are a happy lot, usually tall and well built, scantily clothed, and living quite near to nature.

West of the Canal Zone, in the mountains of Veraguas and in eastern Chiriqui, live the polygamous Guaymies, once under the care of the Spanish missionaries, but who have long since reverted to their own independent life and customs. They do not, however, avoid or repel contact with the other natives, and owing to the rapid expansion of the neighboring populations, so-called civilized, the Guaymies are doomed to lose their characteristics and individuality as a race. Certain ethnological traits, as well as their physical appearance, point to a relationship with Costa Rican tribes.

In consequence of what Dr Pittier calls a "caprice of arbitration," the Republic of Panamá has acquired the northern branch of the Térrabas, or Tirúb, of Costa Rica. These dwell in small and rapidly dwindling numbers at the headwaters of the Teraria, or Tiloría, the main branch of the Changuinola river. They have been investigated by Pittier in the course of his survey of Costa Rica.

These four are the tribes represented today in Panamá. The Dorasques, supposed by some to descend from the great Chiriqui pottery-makers, seem to have disappeared, unless the Brunka of Costa Rica are really what is left of them.

With reference to the possible affinities of the Panamanian tribes with the neighboring stocks, the speaker took absolute exception to the theory of the Chibchan relationship, which he was one of the first to advocate about twenty years ago and which has since received general acceptance under the authority of Brinton, Deniker, and others. The pretended relationship is founded merely on linguistic analogies and on the apparently common origin of a number of words. But these facts can be taken as conclusive only if supported by common anthropological characteristics and also by partial community of uses and customs.

Physically, the Cunas are strikingly distinct from the Guaymies and the Costa Rican Indians, and both stocks offer none but general racial likeness with what is left of the original Chibchas.

In the opinion of Dr Pittier the origin of the Cuna-Cuna must be sought elsewhere than in the interior of Colombia; and the Guaymies, Valientes, Bribri, Térrabas, Sumos, etc., are more likely to be the remnants of a primitive autochthonous stock.

Dr Pittier's address was illustrated with numerous lantern-slides and the exhibition of the objects collected among the Chocoes and Guaymies.

Meeting of April 30, 1912

THE 461ST regular and 33d annual meeting of the Society was held on April 30, at 8 P. M., in the new National Museum building, with the president, Mr F. W. Hodge, in the chair. The following officers were elected:

President—Mr G. R. Stetson.

Vice-president—Mr Francis LaFlesche.

Secretary—Mr William H. Babcock.

Treasurer—Mr J. N. B. Hewitt.

Additional Members of the Board of Managers—Messrs G. C. Maynard, Felix Neumann, E. T. Williams, Drs E. L. Morgan and John R. Swanton.

The following amendments to the by-laws were adopted:

Art. I., Sec. 1, to read: ". . . Its members shall be classed as Active, Life, Associate, Corresponding, and Honorary."

Art. I., Sec. 2, for the words "This sum . . . January" the following to be substituted: "Members elected at any time during the first half of the calendar year shall pay the full amount of their annual dues; those elected during the last half of the year shall pay one-half the regular annual dues."

Art. I., Sec. 3, to read: "Associate Members are those who, after having been elected, shall have paid the annual fee. The annual dues for Associate Members shall be Two Dollars (\$2.00) for each calendar year, payable in January. This sum entitles them to all rights and privileges of the Society with the exception of the *American Anthropologist*."

Old sections, 3, 4, 5, 6, 7, to read 4, 5, 6, 7, 8.

Art. I., Sec. 5 (formerly Sec. 4), "Proceedings" to be substituted for "Transactions"; "or associate" to be inserted after "active"; "those classes" to be substituted for "that class."

Art. I., Sec. 6 (formerly Sec. 5), for "Transactions," read "Proceedings."

Art. II., Sec. 4, for "quarterly" read "annual"; for "transactions" read "proceedings."

Art. III., Sec. 1, for "alternate Tuesdays" read "third Tuesdays of each month."

Art. III., Sec. 3, after the words "Board of Managers" insert "the President."

Art. III., Sec. 4, after "President" insert "or at the recommendation of three members of the Board."

Art. VI., Sec. 1, to read: "These by-laws may be amended by a three-fourths vote of the Active, Associate, and Life Members present at any officially appointed meeting of the Society, provided notice of the proposed amendment shall have been given, in writing, at a meeting held not less than sixty days previously."

TRUMAN MICHELSON,

Retiring Secretary

DISCUSSION AND CORRESPONDENCE

AN INGENUOUS METHOD OF CAUSING DEATH EMPLOYED BY THE OBEAH MEN OF THE WEST INDIES

THE great power which the so-called *obeah* men hold over the lower classes of the colored residents of the West Indian islands, even in some of the most highly educated and Christianized communities, is well known to those who understand these people; but among those who regard them merely as negligible "niggers" to be despised, or as just the same mentally and physically (except for the minor detail of skin pigmentation) as the white-skin races, the existence of this power is, unfortunately, usually regarded as visionary, for the colored people are supposed either to be altogether too stupid to exercise it or too highly Christianized and too thoroughly civilized to stoop to such methods to enforce their will, though almost all such well-meaning but misguided individuals admit its persistence, to a greater or lesser degree, in certain communities remote from the elevating influence of the white race.

Like all peoples who live chiefly out of doors, the colored West Indians have a close acquaintance with many of the mysteries of nature which, while not nearly so intimate as that of many other races, is still intimate enough for all the ordinary purposes of life.

Long ago the *obeah* man of the more progressive communities saw the danger of resorting to the mineral poisons or to the vegetable alkaloids in casting his spells over those whom he desired to remove, and, therefore, in order to retain his power, which of necessity is based on the ability to cause death, was forced to seek some means whereby the same result could be attained without the danger of readily recognizable symptoms coming under the eye of a well-trained medical man. He therefore turned from the mineral and vegetable worlds to the animal, and worked out a method which reflects the highest credit upon his ingenuity, for, while it accomplishes the desired end, it does it in such a way that the doctor is unable to detect in the death of the victim a case of murder, and if his suspicions should by chance be aroused he is equally unable, by legal means, to adduce evidence of such a character as would justify a conviction before a magistrate.

The method of the *obeah* man is very simple. Securing an ordinary

quart bottle, he fills it about half-full of chopped liver—human liver if he can get it, on account of its enhanced moral effect, though any liver will do. This he places in some warm, moist spot and leaves for a few days. The liver decomposes and attracts numerous blow-flies which lay their eggs in it. The bottle is then removed, stoppered, and put away until the flies begin to hatch out.

Now, the colored people, no matter how thoroughly educated they may be, are desperately afraid of "jumbies," or ghosts with peculiarly vicious dispositions, which have a wide range throughout the West Indian region and are of very frequent occurrence. At night, to keep these frightful monsters out of their houses, they close all the windows and doors and stop up all the cracks with wadding; it must be understood that the "jumbie" differs generically from the ghost of most other races in having, though amoeba-like and capable of assuming all conceivable shapes, a certain amount of indefinite substance so that it cannot pass through a solid wall. To make doubly sure, the people sleep naked, when the weather permits, as it usually does, except for a cloth over their heads, for "jumbies" always catch sleeping persons by the head, and therefore if this be covered they are, with the other precautions taken into consideration, reasonably safe.

When the obeah man's bottle is swarming with adult flies, which have been crawling about over the surface of the decomposed liver, he takes it to the house of the person over whom he has cast his spell, pulls out a bit of wadding from a crack, inserts the neck of the bottle, and shakes it, whereupon the flies work their way out into the room. The obeah man then replaces the wadding, throws the bottle where it cannot be found, and goes home. It should perhaps be mentioned that the obeah man is fairly safe from detection on his nocturnal wanderings, as usually he is the only person in the community not afraid to venture out after dark. If any others are abroad he can readily keep out of their way, as, seeking safety in numbers and noise, they will be in bands of various sizes singing or shouting to keep their courage up and to keep the "jumbies" at a distance.

The flies which have escaped from the obeah man's bottle into the room of his victim naturally collect on the warmest object in the room, which is, of course, the sleeping man. Now, laborers are rarely entirely free from cuts, abrasions, or sores, and these are soon discovered by the flies, which walk back and forth across them. The result is almost certain infection, which, at first not regarded as serious, or at least not serious enough to warrant calling upon the more or less distrusted doctor,

spreads rapidly and the man soon dies in a characteristic way which, in some communities at least, everyone knows to be the result of the obeah man's mysterious but potent charm.

AUSTIN H. CLARK

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THE ROOT KOMPAN: ITS FORMS AND MEANING

THE *Natick Dictionary* was evidently compiled by Dr Trumbull at an early period of his Algonquian studies, and contains, on nearly every page, numerous errors, many of them very serious, and some of which were, as opportunity offered, corrected in subsequent writings, and especially in the able papers which he published in later years. Among such errors are the statements made on page 327 on regard to the verbal root *kompau* and its meaning, referred to by Dr Michelson in the *American Anthropologist* (N. S., vol. XIII, p. 339).

This element of Algonquian synthesis, which would now be written *ka^hpaw*, and is a root of secondary order, does not mean 'he stands erect,' nor does it, as Trumbull intimates, contain the word *-omp* (*a^hp*). 'man,' any more than does *aktomp* (*a^hta^hp*), 'bow', for which the compiler, on page 104, suggests the meaning of 'that which belongs to a man'. The root is found in forms that vary but very slightly in all the dialects of the eight or nine linguistic groups into which the Algonquian language is divided, except, perhaps, in Micmac, a dialect so aberrant as to constitute a group by itself. Some of these forms are as follows: Cree (Prairie) *-kăbaw*, Abnaki (Kenebek) *-ga^hbaw*, Lenape *-găpaw*, Ojibwe (St Mary's) *-găbaw*, Nipissing *-kăpaw*, Massachuset *-ka^hpaw*, Narraganset (Coweset) *-ka^hpaw*, Wea *-kăpaw*, Fox *-găbaw*.¹ The characteristic or final letter of this root is *w*, for which Eliot, as in other cases, substitutes its vocalic relative *u* (*oo*). The personal suffixes employed to form an intransitive verb consisting of this root and a prefixed modifying word are most perfectly preserved in Cree, in which in the singular of the indicative present they are in the 1st and 2d persons *-in*, and in the third *-iw*, which in Abnaki and Lenape are reduced to *-i* in the 1st and 2d persons and to *u* or *o* (for *-iu* or *-io*) in the 3d, and which in Ojibwe and Nipissing have vanished in the 1st and 2d persons, and have shrunk to *i* in the 3d. In all other dialects, eastern and western, they have completely disappeared,

¹ The Fox form given by Dr Jones, and written by him also, perhaps inadvertently, *-găpă-*, is extremely remarkable, since it is very unusual to find in an Algonquian disyllabic root a long vowel substituted in one of the syllables for a short one, or vice versa.

and left the duty of denoting the persons to be assumed alone by personal pronouns that either stand before the verb or are permanently prefixed to it; but evidence of their former existence in Narraganset, Massachusetts, Ojibwe, and Nipissing is preserved in the participial endings *-i-yān*, *-i-yān*, *-i-t*, and doubtless also in Fox and closely related western dialects, in which the suffixes of the present indicative must formerly have been *-i^a*, *-i^o*, and *-iw^a*.¹

The root under consideration is, in verb form, translatable into English by a tense of the verb 'to stand,' in a somewhat vague sense, the attitude, whether upright, aslant, sideways, bent backward, or forward, etc., having in all cases necessarily to be denoted by a prefixed adverb or an adjective, preposition, or root used adverbially, since no meaning except 'stand' is inherent in the root;² as Cree *simatchikābāwīw*, 'he stands upright' (where *simatch* is the adverb, from root *simāt*, 'perpendicular,' 'vertical,' *kābāw* is the root, and *-iw* is the suffix of the 3d pers. sing. that turns the combination into a verb or sentence-word); Abnaki *nāwāsi-gā^abāw*, 'he stands bent forward' (stooping); Nipissing *shāshāgkāpāwī*, 'he stands bent backward' (haughtily); Narraganset *pānika^apāw*, 'he stands sideways'; Abnaki *nāwāskwēga^abāw*, 'he stands with bowed head'; Nipissing *o^abikwēkāpāwī*, 'he stands with head erect'; Ojibwe *ānīmī-gābāwī*, 'he stands with back turned' (toward somebody);³ Nipissing *ishpikāpāwī*, 'he stands high' (has long legs); Lenape *ētshīgāpāw*, 'he stands between' (mediates); Fox *nēmāswigāpāw^a*, 'he stands upright.'⁴

¹ It may be stated here that the faint vowel sounds (mostly *a* and *i*) in which words belonging to the Fox, Kickapoo, and other dialects of the Osaki-Shawnee group, and to the Peoria, Miami, Piankashaw, and other dialects of the Illinois group terminate, have, in many cases, no morphologic value, but simply represent peculiarities of pronunciation and are not heard in the dialects of any of the other linguistic groups of the Algonquian language.

² Hence Baraga's *nīn gābaw*, 'I stand,' given on page 243 of Part I of his *Otchipwe Dictionary*, and referred to by Dr Michelson, is incorrect, since *-gābaw* is an incomplete word, and cannot, *per se*, be employed to mean anything; while *nīn nībāw*, 'I stand' (on same page), is correct because *nībāw* is a word complete in itself, from a primordial root in which the meaning of 'stand' is inherent and incapable of modification.

³ Baraga (II, 37) writes this verb *animikogābawī*, which means 'he stands on his belly,' or 'with his face to the ground'; the error being due to the use of the root *ānimiko* instead of the root *ānīmī*.

⁴ Given by Dr Jones on page 801 of *Algonquian (Fox)*, with the very free interpretation of 'he rose to his feet'. On the following page are given two miswritten words, from the same root, in what the author calls elsewhere the "conjunctive mode," a name over which Cuoq's more appropriate term "eventual mode" has forty-odd years' priority, and over which Belcourt's name of "contingent mode" has also many years' priority; while conjunctive is an occasionally used synonym

The manner in which the standing is done, the prolongation or cessation of the act, and the physical or mental state or condition of the subject is designated in the same way, that is to say, adverbially, as: Nipissing *ichisikāpāwi*, 'he stands on his toes'; Ojibwe *pitlgwēsigābāwi*, 'he stands on his heels'; Cree *nāpātēkākābāwīw*, 'he stands on the leg of one side only'; Ojibwe *otchtchlingwānigābāwi*, 'he stands on his knees'; Abnaki *sa*gréga*bāwu*, 'he stands firm'; Cree *nēstukābāwīw*, 'he is tired of standing'; Cree *peyākokābāwīw*, 'he stands alone' (all one); Ojibwe *dāgogābāwi*, 'he stands among others'; Abnaki *a*rāwiga*bāwu*, 'he is unable to stand'; Abnaki *pēnēsa*ga*bāwu*, 'he stands a long time'; Ojibwe *nogigābāwi*, 'he ceases to stand'.

It appears that such verbs can, in Abnaki at least, take on a reflexive form when occasion requires, as: Abnaki *āsa*ga*bāwiēn*, 'he withdraws himself, standing', which is better expressed by French 'il se retire, étant debout'. Negative form *āsa*ga*bāwiēsiwi*.

The root under consideration, with its verbal suffixes, is sometimes mentioned by grammarians as a verbal "termination". But this is true only in the case of intransitive verbs. A verb formed from it takes an initial position in a sentence-word consisting of a transitive verb, and this gives the so-called "termination" a central position, as: Abnaki *ātslēgwākēga*bāwu*, 'he stands on his knees' (kneels); transitively, with indirect object in the dative, *ātslēgwākēga*bāwitāwa*r*, 'he stands on his knees to him'; causatively, *ātslēgwākēga*bāwitāwa*hāra*r*, 'he makes him stand on his knees to him'. It was in alluding to their custom of expressing ideas in what a foreign writer styles "compounds of direful length" that Eliot, in *The Indian Grammar Begun* (1666), said of the natives:

"It seems their ideas are slow, but strong,
Because they be utter'd double-breath'd and long."

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for subjunctive or suppositive, a mood which represents something under a doubt, wish, condition, supposition, etc., which the eventual mode does not. Of the words above alluded to I shall mention but one, viz., *icāgānāsigāpāwātē*, which needs the letters *w* and *i* between *gāpā* and *wātē* to give it a semblance of meaning, and should be written (in the author's orthography, of course) *icāg ānāsigāpāwātē*. I shall say nothing of the impropriety of prefixing the root *icāg* to an already completed word, nor of the curious derived meaning of 'all', 'entirely', that this radical (which is common to Cree, Ojibwe, and Nipissing, and which gives an idea of consumption or exhaustion, of something all gone, all spent, entirely used up) seems to have taken on in the Fox dialect.

MR GERARD AND THE ROOT "KOMPAU"

THE object of my note in the *American Anthropologist*, N. S., 13, p. 339, was to show that the Natick word in question had cognates in Central Algonquian as well as in Eastern Algonquian dialects. If Mr Gerard had confined himself to citing further cognates in other Algonquian dialects, no reply would be necessary. But the following sufficiently indicates the nature of Mr Gerard's critique:

On the first page we find "the eight or nine linguistic groups into which the Algonquian language is divided." Do the dialects cited constitute his "groups"? The authority for this should have been given. The abstracts of my "Preliminary Report on the Linguistic Classification of Algonquian Tribes" (to appear in the 28th Annual Report of the Bureau of American Ethnology), which have been printed in *Science* and the *American Anthropologist*, should have been consulted in this connection and a reason for dissenting from the proposed classification should have been given. We further read: "Micmac, a dialect so aberrant as to constitute a group by itself." In the above abstracts I have expressed myself strongly against this view, and Mr Gerard should at least have referred to the abstracts, and preferably the reason or reasons for his objection should have been stated.

Mr Gerard seems to have entirely overlooked the fact that I had come to the same conclusion as he with regard to Baraga's *nin gābaw*.

Fox *-gāpā-* was not "perhaps inadvertently so written." Surd and sonant are extremely hard to differentiate in Fox, and Dr Jones has honestly recorded his hearing at any given time. For *-gāpāwi-* see below.

The objection to the use of "conjunctive mode" by the claims of priority is somewhat inappropriate. As a matter of fact, from the usage in Fox, Sauk, and Kickapoo, I think "conjunctive" a more suitable term than those mentioned by Mr Gerard. The point that it is liable to confusion with "subjunctive" is really not well taken; the terminations of both modes in Fox so largely coincide that it is as well to designate them by names that suggest each other.

Now, as to "*tcāgānagigāpāwātc*" which needs the letters *w* and *i* between *gāpā* and *wātc* to give it a semblance of meaning, and should be written (in the author's orthography, of course) *tcāgānagigāpāwiwātc*," I am very sorry if it should be, but the fact remains that in Fox it is not so pronounced. The examples cited under *-gāpā-* (*Handbook of American Indian Languages*, pt. 1, pp. 801-802) might have warned Mr Gerard of this. In Kickapoo likewise *-gāpāwi-* does not occur.

Another Fox example (collected by me last summer) is *ā'telepigāpāwātc'* 'they were then standing in a circle'. [An example noted by me this summer is *telepigāpālaw'*, 'let us stand in a circle' (-*tāwe*, Handbook, p. 826).] Note also Fox *ā'pemigāpānit'* 'they were standing in a line', W. Jones, Fox Texts, 224, 13 (*ā-nitc'*, Handbook, pp. 820, 830; *pemī*, p. 768; 'p for p regularly after ā-).

On page 542 we read: "and doubtless in Fox and closely related dialects, in which the suffixes of the present indicative must formerly have been -i^a, -i^a, and -iw^a". If that were the case they would appear as such today, for final ^a, etc., remain in Fox.

The crowning point is reached in the following: "It may be stated here that the faint vowel sounds (mostly *a* and *i*) in which words belonging to the Fox, Kickapoo, and other dialects of the Osaki-Shawnee group, and to Peoria, Miami, Piankashaw, and other dialects of the Illinois group terminate, have, in many cases, no morphologic value. . . ." Inasmuch as every animate noun and every inanimate noun in the nominative singular respectively end in * and † in Fox, Sauk, and Kickapoo; that in these the conjunctive and subjunctive modes are frequently (leaving aside the question of prefixes in the conjunctive) to be distinguished only by the terminal † and * respectively (see the table, p. 820, in pt. 1, *Handbook of American Indian Languages*); that the conjunctive and imperative modes in a number of cases are to be distinguished only in the same way (see the table, p. 826; *wī-ātcī*, *wī-āgi*, *wī-āwātcī*, *wī-amowātcī* are really future conjunctives, and hence should not have been given even though they have imperative values); that several forms of the participial mode (see table, p. 828) differ from the conjunctive and subjunctive correspondents by the terminal * only; that certain forms of the potential and prohibitive modes (see table, p. 824) are kept apart only by the terminal * and † respectively; that the third person singular of the independent mode distinguishes the animate and inanimate by * and † (see table, p. 817); and that † in Montagnais has a phonetic effect, the extremeness of the statement becomes apparent.

Much the same can be said of Shawnee that has been said concerning Fox, Sauk, and Kickapoo. From the late Dr Gatschet's notes I infer that Miami and Illinois also make these distinctions.

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"WOMEN'S LANGUAGES"

THE literature relating to "women's languages" among primitive peoples, and the theories as to their origin and significance, are pretty well cited and discussed in the section "Frauensprachen" (pp. 7-13) of Dr Richard Lasch's recent monograph on *Separate Languages*.¹ Dr Lasch points out the insufficiency of the older theories, particularly that offered by Bréton in his *Carib Dictionary*, published in 1664, viz., that the existence of a women's language in Dominica was due to the fact of the incorporation by the Caribs of women belonging to foreign tribes, who were saved when the male members were exterminated. These women preserved and handed down from generation to generation of their sex remnants, for example, of the Arawak speech of their ancestors. This view was adopted by Humboldt, Waitz, and others. Some other social *motif* than wife-stealing, or the capture of women, must be looked for at the source of "women's languages". Sapper,² in 1897, sought to explain these differences between the speech of men and women as due to the social-economic factor of differentiation of occupation and labor, leading naturally to such diverse appellations of one and the same thing, etc. This view is adopted by Dr Lasch, who points out that the bulk of "women's words, phrases, etc.," as compared with the mass of the language spoken in common by the two sexes, is not so great as some have supposed, relying on the statement of earlier writers concerning the Caribs of the West Indies. Religious and animistic concepts in woman's sphere of thought may also have had some influence here; likewise the play-instinct, which often makes itself felt longer in woman. Taboos of naming also have a rôle in the production of the speech-diversities in question. Lasch mentions, too, the theory of Frazer, who seeks to explain the origin of gender in language by connecting the masculine and the feminine nouns, respectively, with the "men's" or the "women's" languages.

Since Lasch's monograph the most important addition to the literature of the subject is contained in the linguistic material of the Carayan stock published by Dr Fritz Krause³ in his book on the Araguaya country of Brazil. The Caraya have long been known as one of the Indian people among whom a "woman's language" existed. Ehrenreich,⁴ in

¹ *Mit. d. Anth. Ges. in Wien*, Bd. 37, 1907.

² See *Internat. Archiv für Ethnogr.*, vol. X, 1897, p. 571.

³ In *den Willnissen Brasiliens, Bericht und Ergebnisse der Leipziger Araguaya-Expedition 1908*, Leipzig, 1912. See pp. 60, 343-344, 416-457.

⁴ See *Zeitschrift für Ethnologie*, vol. XXVI, 1894, pp. 20-24.

his article on the Caraya language, has something to say on the subject and gives a vocabulary. The investigation of this "woman's language" was one of the problems which the author set himself. Dr. Krause was successful in obtaining a large number of "women's words" (those given in the vocabulary, with variants, exceed two hundred). Those in the language of the "northern horde" of the Caraya were obtained from men, those in that of the "southern horde" from women, the latter being probably more exact. The men style the "women's language" *ibínā'li*, i. e., "very bad," and make jests about it. Ehrenreich, who first demonstrated the existence of a "women's language" among the Caraya, found the chief difference in the speech of the two sexes to consist in the insertion, for example, of a *k* wherever in the language of the men two vowels came together. Thus, the men's word for "rain" is *biū*; the women's, *bikū*. The initial *k* of the women is dropped by the men. Dr. Krause confirms this (pp. 60, 343), and cites the jest of the Caraya Indian Pedro, who said one day that Dr. Krause's companion, Francisco Adam, "was a woman", because he pronounced the Brazilian word *jacuba* (a kind of drink), not *šāúbā*, as a man would have done, but *šākúbā* after the fashion of the women. Ehrenreich thought that the "women's language" of the Caraya represented perhaps an older form of the tribal speech retained by them. Krause, who notes the fact that the women pronounce their words better than the men (p. 60), states also (p. 343) that "probably the women's dialect, with its fuller tone, represents an older form of the language." Of the possible origin of the Carayan "woman's language" he observes (p. 343): "Of a distinct language, arisen, for example, through the reception of female captives from foreign tribes, there is no question here. The taking over of foreign women (Tapirapé, Cayapó, Šavajé) is too limited to have enabled their language to have had any such influence, and, moreover, the deviations from the men's language are too small to make it necessary to look for a foreign derivation of the women's language." The character of the Carayan "women's language" will be seen from the following list of words from the language of the "southern horde":

A. *Words differing but slightly*

ENGLISH	MEN'S LANGUAGE	WOMEN'S LANGUAGE
Head	<i>ōhō'</i>	<i>kōhō'</i>
Ear	<i>nōōli'</i>	<i>nōhōāli'</i>
Shoulder	<i>āšlōli'</i>	<i>āšikōli'</i>
Star	<i>dāīnd'</i>	<i>dāhīnd'</i>

Boy	<i>šāliwī'</i>	<i>ūākhīw'</i>
Leg-bands	<i>dēōbūāš'</i>	<i>dākōbūādā'</i>
Fire	<i>hāōtō'</i>	<i>hākō'tī</i>
Raw cotton	<i>āsōtā'</i>	<i>āsōnt'ā'k'</i>

B. *Words differing considerably*

Neck	<i>lāhō'</i>	<i>mādō'</i>
Elbow	<i>tā(ē)hō'</i>	<i>dākōhō'</i>
Snail-shell	<i>kūūhō'</i>	<i>bōdāhō</i>
Six	<i>īēāl'jō'</i>	<i>lēkālō'lā</i>
Four	<i>īndmbīō'</i>	<i>īmākūbīkō'</i>
Knife (European)	<i>mā(h)ū</i>	<i>māk</i>

Krause includes in his vocabulary of the Caraya "woman's language" some sixty words from Ehrenreich.

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ANTHROPOLOGIC MISCELLANEA

An Important Manuscript Discovery.—A discovery of great importance to early Mexican history and ethnology has recently been made by Mrs Zelia Nuttall by the finding, in the department of manuscripts of the National Library at Madrid, of the *Crónica de la Nueva España* of Francisco Cervantes de Salazar. The manuscript is anonymous, but its author has been identified beyond question by Mrs Nuttall. The volume consists of 885 closely written pages and is bound in a beautiful old cover of red leather with gilt tooling. The manuscript is unfinished and is without an index. It had originally been planned to prepare the work in two parts: at present it consists of six books of unequal length. Book I, which begins with a summary and arguments, consists of 32 chapters; book II has 36 chapters; book III is designated as "of the Second Part" and contains 63 chapters; book IV has 134 chapters; and book V, 198; the unfinished book VI has only 32 completed chapters and the heading of a thirty-third. Of these parts the first and shorter one is devoted to a description of the ancient rites and customs of the Indians, and the longer second part to the discovery and conquest of Mexico. The manuscript has been freely censored, whole chapters having been stricken out (including twenty-four chapters of book IV in which Salazar treats of the first entry of Cortés into the City of Mexico and gives the most detailed descriptions of the temples, palaces, buildings, gardens, etc.), but fortunately without rendering the text illegible except in a few places. A noteworthy feature of the *Crónica* is the many harangues, or rhetorical speeches, that it records as having been delivered by Montezuma, Cuahtemoc, and the caciques of Tlaxcalla, Texcoco, etc.

Salazar was born in Toledo, Spain, about 1514. He was a favorite pupil of the eminent Latin scholar Luis Vives, and became Latin secretary of Cardinal García de Loaysa, great master of the Dominicans, Archbishop of Seville, and Inquisitor General and President of the Council of the Indies. Salazar occupied this post until the death of the Cardinal in 1546. In that year he published his first book, "Works which Francisco Cervantes de Salazar made and Translated," etc., which was dedicated to his friend Cortés. In 1550 Salazar was professor of rhetoric in the University of Alcalá, but he went to Mexico a short time before

the University was founded there and was the first to occupy its chair of rhetoric; he also delivered a discourse at the inauguration of the Latin chair in 1553, in which year he was graduated with several degrees, for he taught and studied at the same time, and took a course under the distinguished Fray Alonzo de Vera Cruz. In 1554 his famous *Diálogos* was published; in 1555 he took holy orders and subsequently acquired the highest degrees in theology. In 1559 Cervantes de Salazar was appointed chronicler of the City of Mexico and commenced to write his *Crónica* of New Spain. In 1562 he made a journey to the mines of Zacatecas, and in the following year became a canon (Herrera says a dean) of the cathedral. He died in 1575.

"That Cervantes de Salazar was held in the highest esteem by the best authorities," writes Mrs Nuttall in a paper presented before the International Congress of Americanists at its recent meeting in London, "is convincingly shown by the fact that the historian Herrera states that, in compiling his *Decades*, he made use of certain 'Memorias' of Doctor Cervantes, with the remark that he was a diligent and learned man and that he preferred him, as an authority, to Friars Olmos, Sahagun, and Mendieta, who, he says, 'had no authority'." "As to the value of the *Crónica* itself," continues Mrs Nuttall, "there can be no doubt. It must be recognized that no history of the conquest of Mexico was written under such favorable circumstances as those which Cervantes de Salazar enjoyed when he, a learned scholar and a personal friend of Cortés and other conquerors, only 20 years after the conquest began to write his *Crónica* in the City of Mexico, where, as he himself emphasizes, innumerable eye-witnesses of the conquest still lived. . . . In conclusion I must mention what to me seems very remarkable, namely, that Cervantes de Salazar's *Crónica*, book I, contains not only descriptions of some of the Aztec festivals identical with the text of the Magliabechi manuscript, but also descriptions that exactly fit the illustrations to which the texts are missing in the said manuscripts. Moreover, Salazar says, in chapter 28, which deals with the irregular festivals of the Indians, that he will merely refer to some in order to carry out the plan of his chronicle, but that he was 'leaving the rest to be described, with other things worthy of being known, in a separate book'."

It is Mrs Nuttall's intention to publish an English translation of Salazar's work.

Indian Diseases and Mortality.—In a message to the Senate and House of Representatives on August 10, President Taft included the following statement respecting the present condition of health of Indian

reservations and in Indian schools and urged an appropriation of \$253,350 for the purpose of enabling the Indian service to make a complete medical and sanitary survey of the whole field:

The death rate in the Indian country is 35 per thousand, as compared with 15 per thousand—the average death rate for the United States as a whole. The average death rate in some of the healthiest of our cities is as low as 12 per thousand. No exact figures are yet available for infant mortality among Indians, but field studies now being made show that while proportionately more Indian babies than white babies are born, very many more Indian babies die.

Last year of over 42,000 Indians examined for disease, over 16 per cent of them had trachoma, a contagious disease of the eye, frequently resulting in blindness, and so easily spread that it threatens both the Indian communities and all their white neighbors. It is a disease so serious that at no port of entry in this country is the immigrant with trachoma allowed to land. On the Kiowa, Comanche, and Apache reservations 71 per cent of the school children have trachoma. The curing of this disease frequently requires years of constant care. Of the 40,000 Indians examined, 6,800 had tuberculosis. On the White Earth reservation in Minnesota, a house-to-house canvass in 1910 and 1911 revealed that of 3,300 Indians, 600 had tuberculosis. An examination of half the Indians on the Blackfeet reservation, Mont., shows that one-third of that number have tuberculosis. Of the total population of the Colorado River reservation, Arizona, 20 per cent have tuberculosis. At the school of the Mescalero reservation in New Mexico, where climatic conditions are ideal, 5 per cent of the children in school have tuberculosis. Of the 7,000 Indians of the Pine Ridge reservation, South Dakota, over one-fourth have tuberculosis. Even in southern California at least 10 per cent of the Indians have this dread disease. In addition to these scourges and the special lowering of vitality which exists in these sections where the Indians can procure intoxicants, they are more subject than the average white man to the whole list of acute diseases. Few Indian homes anywhere have proper sanitary conditions, and in many instances the bad condition of their domestic surroundings is almost beyond belief.

Prof. Warren K. Moorehead, curator of the department of archeology, Phillips Academy, Andover, Mass., reports that the archeological survey of which he has charge finished its first year in Maine September 8. There were with the expedition at various times from eight to twelve men, and nearly all of the Penobscot valley was examined and mapped. A great deal of work was carried on at Passadumkeag, 40 miles above Bangor, and at Lake Alamoosook, 5 miles south of Bucksport. At Passadumkeag one undisturbed cemetery was entirely dug out and at Alamoosook two cemeteries, and at Orland a fourth was found. In these four cemeteries were 170 graves, from which about 800 stone objects were recovered. These graves contained large quantities of red

ochre—not the small particles often encountered in exploration in the West and South, but quarts, and in several instances more than a peck. The objects found in the graves vary from one or two to nineteen in number, and comprise the true gouge, various modified forms of gouges, and stone celts and hatchets, usually squared. There were also some unknown forms of stone objects, particularly at Passadumkeag, where long oval stones were found; these are perforated, and several exceed a foot in length. The absence of grooved axes, of pottery, and bone and shell objects, of pipes, etc., indicates the presence of a culture different from that of the Algonquian tribes as generally known. Save in one instance, no human bones were discovered, and the graves are so old that even some of the stone objects have commenced to disintegrate. Mr Charles C. Willoughby, twenty years ago, opened three burial places in southern Maine and met with similar conditions. Professor Putnam and Mr Willoughby considered the graves extremely old. The name "the red paint people" has been applied tentatively to this culture.

Prehistoric Implements near Halifax, England.—In the twelfth bulletin of the Bankfield Museum, Halifax, England, Messrs H. P. Kendall and H. Ling Roth, the honorary curator, publish a catalogue of an interesting exhibition, now open, of prehistoric implements collected in the neighborhood of that city. They were found under a layer of peat, associated with remains of the Bronze age. But the implements of that metal hitherto brought to light are small and fragmentary, and it is thus obvious that the age of stone overlapped that of bronze. The period assigned to these specimens is about 500 B. C. Some of the arrowheads are fine examples of secondary chipping. Of special interest are the so-called "pygmy" flints, found in considerable numbers. Mr Ling Roth dismisses the theory that these were fixed together in a handle and used like the implement found by Dr Livingstone among the Makalolo for the destruction of the inner tissue of hides. While admitting that some of them may have been used for the purpose of tattooing, he urges that their great numbers show that this can not have been their only object. Many uses may be conjectured for these curious implements, but no single explanation yet suggested accounts for their special forms.—*Nature*.

Excavations at Carchemish.—This season's excavations at Carchemish, which, according to *Nature*, have been carried out by Messrs C. L. Wooley and T. E. Laurence under Mr Hogarth's direction, have resulted in some important additions to our knowledge of Hittite art and

culture. Riverside quays have been discovered below the Citadel mound, decorated with reliefs in the style of the Cappadocian monuments, and a further series of interesting reliefs have been found along the southern wall of the great courtyard in front of the Lower Palace. On one of these the camel makes its first appearance in Hittite art, and another shows a strange deity having the body of a scorpion, eagle's wings, and bull's feet, who is associated with the Hittite Thunder god. The most interesting of the smaller finds was a part of a large clay cylinder inscribed with Hittite hieroglyphs, and it suggests the possibility of finding further native records, other than monumental inscriptions, on the site. Materials for a valuable pottery-sequence have also been obtained both at Carchemish itself and from a cemetery at Amarna, about eight miles to the south of Jerablus.

Lefthandedness among Papuans.—In his interesting reminiscential volume, *An Outpost in Papua* (London, 1911), Rev. A. K. Chignell has the following rather significant passage (p. 118):

"We have one or two dunces: Garita, who comes from Murin, and is less than half-witted; and Embaki, who somehow escaped school-going until his fingers were too big and stiff to hold around a pencil; and Basira, who always sleeps peacefully in his corner most of school-time, and a few others.

"I have noticed no tendency to lefthandedness among the two or three hundred children I have watched in this school, except in the case of these mentally deficient youths, who are all, it seems, lefthanded. And there is Suka, the cripple boy, who walks on his knee-caps with his feet stuck up in the air behind him, like a big mosquito. Suka is not merely lefthanded, but he tries to write backwards, as Hebrew is written, and, if he has to copy anything from the blackboard, he actually manages to get everything upside down as well. I have never understood how he can do it, unless there is an arrangement of lenses and looking-glasses inside his misshapen head, which makes him see the whole world upside down and inside out."

The occurrence of lefthandedness with "mirror-script," etc., in a young Papuan is perhaps deserving of notice here.

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Rock Carvings in France.—Dr G. Lalanne, under the title "*Bas-reliefs à figuration humaine de l'abri sous roche de Laussel (Dordogne)*," describes, in *L'Anthropologie* for March-April, two remarkable rock carvings, one of a male, the other of a female. The block on which the

female carving appears now lies outside the excavation. It represents a woman in profile, holding the horn of a wild ox in her hand, but nothing remains to indicate the expression or the mode of arrangement of the hair. It is apparently of the Paleolithic type which has already been discovered at Brassempouy in the Landes, Menton, and Willendorf in Austria. These discoveries appear to indicate that in the Aurignacian period central Europe, and possibly the Mediterranean area, were occupied by a negroid race, characterized in the female by well-marked steatopygy, such as that which appears among the modern Bushmen. The male image, on the other hand, displays a delicacy of form which is in direct contrast to that of the female.

Early Man in Switzerland.—A summary of the results of recent investigations with regard to the former presence of an "Allemannienne" race in Switzerland is contained in the second volume of the 94th Jahresversammlung of the *Verhandlungen der Schweiz Naturfor. Gesellschaft*. Examination of a series of prehistoric skulls and skeletons indicates that the ancient Allemanniennes and modern inhabitants of northern Switzerland belong to two widely sundered types, the former being related to the population of Franconia, Moravia, and northwest Germany from the ninth to the fourteenth century. These people were a blond-haired race resembling in physical characters the modern Swedes. This indicates that while great modifications have taken place since prehistoric times in the population of northern Switzerland and southern Germany, that of Sweden has remained practically in its original primitive condition, so far as the physical type is concerned.—*Nature*.

IN *The Museums' Journal* for June, Dr F. A. Bather describes an open-air folk museum recently established by the local schoolmaster of Bunge, a thinly inhabited parish in the north of the Baltic island of Gotland. Part of the meadow occupied by the museum contains a seventeenth-century farm-house, which forms the nucleus of the collection. In the farm-yard various primitive agricultural implements are exhibited, and in the adjacent smaller buildings representations of local industries, now passing away, are shown. One peculiar feature of the museum is a patch of ground containing models of various forms of burial practised in the neighborhood from the first century B. C. to the fourth or fifth century A. D., including a model of a stone monument in the shape of a Viking ship. Close by is a judgment circle of eight large stones, and in another part of the ground is a thingstead, a circle of small stones with a mound for the speaker.

EXAMPLES of the transition between the use of stone or bone implements and those of metal are always interesting. In the *Cairo Scientific Journal* for June, Mr O. Bates describes two cases of this kind. In one the narrow chisel-shaped celts so often found in Neolithic kitchen-middens and camp sites are compared with a tool made of the horn of the *Gazella rufifrons*, which is rubbed down to a flat edge and used at the present day in the Sudan for slivering bark from trees for the purpose of making cordage. The second is an implement used in the same region for cutting coarse thatching grass. It consists of a haft of mimosa wood into which is socketed a celtiform blade of iron, which is fixed at an angle of about 20 degrees to that of the hafting, so that when the tool is grasped by a worker who bends from the hips, the iron is parallel with the ground. This tool preserves a characteristic form, which must have preceded the introduction of the curved reaping-hook, and illustrates a method of hafting probably used with some of the flat, broad-edged stone celts of Neolithic times.

NEWS reached Copenhagen early in May, as we learn from the *Geographical Journal*, of the arrival at Maskat of Mr Barclay Raunkier, a Danish traveler, who set out for that country in November, 1911, under the auspices of the Royal Danish Geographical Society. The explorer traveled from Aleppo via Baghdad to Basra, which he reached on January 22. From Koweit (where he was well received by the regent) his intention was to go south to Riad in the Wahabi country, and thence to make his way back to the Persian gulf by an eastward route through the Hofuf oasis. According to the preliminary announcement he appears to have successfully carried out this program, and to have secured valuable anthropological, zoological, and botanical observations, besides mapping the country traversed. Mr Raunkier is known as a writer on the geography of plants, and for a previous journey made by him in central Tunis.

THE June number of *The American Museum Journal* states that Mr William Floyd, of Long Island, while looking for archeological remains on his estate, uncovered an Indian burial, the skeletons from which he has presented to the Museum. The grave contained three skeletons, one apparently that of a girl, the others of two middle-aged men. As is the case with most burials in this vicinity, no objects of any kind were found in the graves. Mr Max Schrabisch of Paterson, New Jersey, reports having found a very important rock shelter near Stony Point, New York. The excavations of this shelter had been rewarded with rich finds of pitted hammer-stones, knives, scrapers, and pottery.

ANDREW LANG died of heart failure at Banchory, Scotland, on July 21, aged sixty-eight years. In the field of anthropology Lang was best known by "The Book of Dreams and Ghosts," "The Secret of the Totem," "Custom and Myth," "Myth, Ritual and Religion," and "The Making of Religion." Altogether his writings are legion and of a remarkably wide range. A critique by Lang on the subject of totemism appeared in the last number of this journal. A more extended notice of his life and work will appear in our next issue.

THE late Professor Lombroso offered every second year in connection with the *Archiv d'Antropologia Criminale* a prize of 500 francs for the best work in connection with criminal anthropology. His family have now offered to the organization committee of the Eighth International Congress of Criminal Anthropology a prize of 1,000 francs for the best work reported to the congress which is to be held in Budapest in the summer of 1914.

THE committee on Indian Affairs of the House of Representatives has favorably reported a bill repealing the law that permitted the destruction of the old Wyandot burial ground in Kansas City, Kansas, which was desired for commercial purposes by business interests. Scores of survivors of the Wyandot tribe petitioned that the graves of their ancestors be left undisturbed. The bill has been passed by the Senate.

THE annual meeting of the American Anthropological Association will be held in Cleveland, Ohio, beginning December 30, 1912, in affiliation with Section H of the American Association for the Advancement of Science and the American Folk-Lore Society.

IN THE *Journal of Anatomy and Physiology* (XLVI, part III) Dr Duckworth describes an Ashanti skull with defective dentition. It is that of a young adult in which the upper incisor teeth have been removed, evidently in early childhood. This kind of mutilation is characteristically East African, and is met with in crania from rock-hewn tombs in Abyssinia of the fifth century A. D.

PROF. FREDERICK STARR, of the University of Chicago, sailed on June 20 for Africa on an expedition for anthropological research. After a visit to Morocco and the Canary islands, Professor Starr and his party will go directly to Liberia, and thence into the back country, where they will spend the rest of the year, returning about January 1, 1913.

By resolution of Congress, the "Handbook of American Indians North of Mexico," published as *Bulletin 30* of the Bureau of American

Ethnology, has been ordered reprinted in an edition of 6500 copies, of which 4000 copies are for distribution by Representatives, 2000 by Senators, and 500 by the Bureau.

MR SAVAGE LANDOR, the well-known explorer, has returned to London, after a journey of eighteen months across South America, largely through that portion of the continent which is still little known to Europeans and Americans. In recognition of his achievement the Brazilian Congress has voted him the sum of \$20,000.

ON June 26, King George V laid the corner-stone of the new National Museum of Wales at Cardiff. All sides of Welsh life and activities were represented, and members of home and foreign museums were present. The museum is to be in the form of a rectangle, 440 by 250 feet, enclosing a quadrangle of 307 by 134 feet.

THE annual exhibition of antiquities discovered during the third season of excavation at Meroë, Sudan, carried on in connection with the Institute of Archeology, University of Liverpool, was held in the rooms of the Society of Antiquaries, Burlington House, London, W., July 9-23, inclusive.

STUDENTS of the Indians of Virginia will be glad to learn of the publication, by the Virginia State Library at Richmond, of *A Complete Index to Stith's History of Virginia*, by Morgan Poitiaux Robinson (Richmond, 1912).

DR W J MCGEE died at Washington on September 5th, aged fifty-nine years. An extended notice of Dr McGee's life and work will appear in our next number.

THE SMITHSONIAN INSTITUTION will send without cost to any student requesting them, copies of the lithographic plates illustrating Swan's "Haidah Indians of Queen Charlotte Islands" published in volume XXI of *Smithsonian Contributions to Knowledge*, Washington, 1874.

MM. SITTONI and Podenzana have founded at Spezia a new review devoted exclusively to the past history, present condition, and future fortunes of old Liguria. It is entitled *Archivio per la etnografia e la psicologia della Lunigiana*, and the first number appeared in 1911.

NATURE for August 1 contains an article on the Pygmies of New Guinea, whose existence has only recently been put beyond doubt, summarizing some of the more important results of the investigations of Williamson and Wollaston.

MR HARLAN I. SMITH, representing anthropology, has been elected a member of the executive committee of the staff of the Canadian National Museum, whose new home, the Victoria Memorial Museum building at Ottawa, has been completed.

ON February 3, an ethnographical museum was opened at Cherbourg, France, due to the labors of Dr René Collignon. Museums of ceramics, numismatics, and natural history have been founded in this place by the same scholar.

MR A. M. HOCART has been appointed to a senior studentship at Exeter College, Oxford, tenable for two years, in order that he may undertake anthropological research in Fiji and its immediate neighborhood.

THE Berlin Society on Racial Hygiene has offered a prize for the best discussion of the following question proposed by Dr Hallwachs: "Is not material and social progress a danger to the health of the race?"

DR GEORGE A. DORSEY, associate professor of anthropology in the University of Chicago and curator of anthropology in the Field Museum of Natural History, has returned from a three years' tour of the world.

THE First International Eugenics Congress is reported to have been a complete success. The membership of the Eugenics Society, 750, shows what widespread interest is taken in this practically new science.

MUCH interest has been aroused by the discovery of a human skeleton of modern type, alleged to have been taken from mid-glacial sands near Ipswich, England.

AN important discovery of worked flints has been made by H. Commont in the clays of Sainte-Walburge at Liège, on the highest point of the Hesbays plateau, 140 meters above the surface of the Meuse.

DR FEDERICO OLORIZ Y AGUILERA, one of the most noted anthropologists of Spain and organizer of the anthropometrical service of the Department of Justice, died at Madrid, February 27, 1912.

DR TRUMAN MICHELSON, of the Bureau of American Ethnology, Washington, has resumed his field researches among the Algonquian Indians and is now among the Foxes of Iowa.

DR A. TRÉMEAU DE ROCHEBRUNE, author of works on botany, comparative anatomy, anthropology, and ethnography, died April 23 in his 80th year.

DR HERBERT MÜLLER, of the Anthropological Museum in Berlin, has gone to China for ethnological researches in Manchuria and eastern Mongolia.

A MONUMENT to Prof. E. T. Hamy, the work of the eminent sculptor Fagel, has been erected at Boulogne-sur-Mer, and was unveiled June 30.

THE Third International Archeological Congress will be held at Rome, Oct. 9-16, 1912.

M. ÉMILE CARTAILHAC has been promoted to the grade of Officier of the Legion of Honor.

M. GUSTAVE CHARIVET has been nominated to the rank of Chevalier of the Legion of Honor.

JULES HÉBERT, of the Musée d'Ethnographie du Trocadero, died March, 9, 1912, aged 58.

THE Fourth International Congress of Religions was held at Leyden, Sept. 9-13, 1912.

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A FOREWORD ON THE SOCIAL ORGANIZATION OF THE CREEK INDIANS¹

By JOHN R. SWANTON

RECENT investigations by the writer among the Indians of the Creek Confederacy have brought to light certain facts regarding the social organization of that group of tribes which should be at the disposal of all students of primitive society. In this article will be given some of the more important of these, although it should be understood that the investigations are by no means complete.

The so-called "Creek Confederacy" was built up of several tribes speaking the Muskogee or Creek language proper and at least as many others with different languages, all, however, with the exception of one or two recent additions, being languages of the same stock.² Each principal town or tribe was called *talwa* by the Muskogee, and *okla* by the Hitchiti-speaking people. It is also said, though I have not examined this matter thoroughly, that each town formerly possessed a distinctive town badge or totem; alligator for Tukaba'tci, eagle for Kowita, snake for Atasi, garfish for

¹ Published by permission of the Smithsonian Institution.

² As original Muskogee tribes may be named the Abi'ka, the Coa, the combined Kasi'ta and Kowita, the Oktal, the Tukaba'tci, and perhaps the Wekokal, Eufaula, and Hilibi. The principal non-Muskogee tribes were the Albamu, Koasati, Tuskegee, Chihaha, Osotchi, Atsik hata,—the last including all of the Hitchiti-speaking people,—and more recently the Natchez, Yuchi, and part of the Shawnee. There is some reason for doubting the original connection of the Tukaba'tci and Oktal with the Muskogee proper.

Koasati, etc. All but the last of these badges named also occur as clan totems.

Irrespective of the languages spoken by them, all of the towns formed two great divisions, or "fires," and towns of each fire called one another "friends," those of the opposite fire "opponents," or "opposites." This distinction came out most clearly in the great ball games, which partook somewhat of the character of wars, and were always between towns of opposite fires.

These two fires have been called "white" and "red" on the supposition that they were concerned with war and peace, respectively, and such was probably the case, but the color terms were used by only two Indians so far as I remember. Four particular towns are supposed to have had a kind of precedence, namely, Kowita and Tukaba'tci for the red towns, and Kasi'ta and Abi'ka for the white towns. Nevertheless, in the matter of absolute headship the white towns are ignored and one is told that either Tukaba'tci or Kowita was the head of all. As a matter of fact these were the leading towns among the Upper and Lower Creeks respectively. Of the two, Tukaba'tci appears to have had greater eminence, the population of the Upper Creeks having been greater and that of Tukaba'tci itself down to the present day the greatest in the confederacy. Independently of this theoretical scheme of things, Hickory Ground has a certain prestige, being called the "mother town" of the Okfaskis and Tulsas, but this may be due partly to the fact that it was Alexander McGillivray's town and more recently that of "Crazy Snake." In spite of its prominence there is some reason to think that Tukaba'tci was not originally a Muskogee town.

The question of town relationship is somewhat complicated with that of clan relationship which I will now describe. I have obtained the names of twenty-seven clans among the Creeks proper and the Seminole, but two of these rest on information furnished by only one or two informants and may be ignored. The others are: Wind, Skunk, Fish, Rabbit, Bear, Wolf, Bird, Eagle, Beaver, Panther, Wildcat, Potato, Raccoon, Oktayatcalgi, Fox, Alligator, Tamalgi, Turkey, Deer, Mole, Toad, Pahosalgi, Otter, Snake, and Kapitsalgi.

In many tribes a simple list of clans like this has been reported, leaving one the impression that they are all of equal value; but such is far from true, at least for the Creeks. In the first place the Skunk, Fish, and Rabbit are always given as parts of the Wind clan, the Wolf as part of the Bear, the Wildcat as part of the Panther, and the Mole and Toad as parts of the Deer. About the Eagle clan opinion differs, some for obvious reasons classifying it as a section of the Bird, others saying that it is a part of the Raccoon, because the Raccoon and related clans are entitled to carry eagle-feathers in the Feather dance, while the Bird clan carries white-crane feathers. This latter statement is undoubtedly true for some towns, whether the former is or not. Again, one is usually told that the Beaver and Bird clans are "almost the same thing." Another group is composed of the Raccoon, Potato, and Fox. In some places, especially among the Lower Creeks, the Potato seems to be the principal clan of this group; in others the Raccoon. The Raccoon is prominent because it is the leading clan of *Tukaba'tci*. Sometimes the *Oktayatcalgi*¹ are added to the last group, sometimes not. Still another group consists of the Alligator, *Tamalgi*,² and Turkey, which in turn are occasionally made parts of the same group as the Raccoon, Potato, and *Oktayatcalgi*. The *Pahosalgi* are classed usually with the Deer, and the *Kapitsalgi*³ and Snake with the Alligator. The Otter appear to belong with the Alligator also. This relationship generally involves prohibition of intermarriage also, a prohibition which held in nearly all towns for the Wind, Skunk, Fish, and Rabbit; the Bear and Wolf; the Bird and Beaver; the Panther and Wildcat; the Alligator, *Tamalgi*, and Turkey; the Deer, Mole, and Toad; and the Raccoon, Potato, and Fox. But the intermarrying clan groups varied also from town to town. In some the *Oktayatcalgi* could not marry in the Raccoon, Potato, and Fox. In some the Alligator, *Tamalgi*, and Turkey could not marry these clans either. In one case the Wind and Bear could not intermarry, in another the Wind and Bird, etc., and I am

¹ This may contain the word for "sand," *oktahu*.

² It is possible that this clan is descended from an old town or tribe.

³ Said to mean "Ashes people."

informed that in the Koasati towns there were but two exogamous groups corresponding to divisions (Hathagalgi and Tciloqogalgi) which I am about to explain. These town differences, however, do not seem to have held if marriage was contracted outside of the town, and within the town it appears to have been due to an interesting social custom, in accordance with which a certain number of clans in each town formed, or rather held, councils together. Thus, if there were but few of one clan in a given town, the representatives of that clan would join another, and they were especially likely to join some clan that had a good speaker. The children of the members of all the clans forming a council would then be brought up and instructed together, and marriage was forbidden between them. Marriage within the clan was absolutely prohibited, although I was told by one informant that it was permitted between persons of the same clan not belonging to towns known to be related. Thus, according to him, a man of the Wind clan of Kowita could not marry a woman of the Wind clan of Broken Arrow, a branch of Kowita, but might marry one of the Kasi'ta Wind people, etc. This was denied by everybody else. We have facts regarding exogamy pointing in two different directions. It is asserted positively, and is certainly partly true, that in late times the older prohibitions of marriage between some clans have been broken down. For instance, in Hilibi, a slip having occurred between an Alligator man and a Turkey woman, it was concluded to overlook the offence and to consider the clans kindred *only in the daytime*. Other clans broke completely apart, the expression in this case being that "their fire was put out." On the other hand, an old and very intelligent Kealêdji Indian positively declared that anciently clans were not exogamous, but that at one time a council was held at which it was determined they should be made so. The story has small value as history, but the fact that such an origin for clan exogamy is considered possible is important, and it must be taken in connection with the further fact that marriage was also prohibited between near relatives belonging to clans that could ordinarily intermarry freely. In connection with the other data brought forward, this demonstrates that, among the Creeks

at least, clans and exogamous groups have no necessary connection with one another. No clans in early historic times were endogamous, and that is all the significance that clans possessed in marriage relations.

Another matter of considerable importance now has to be taken into consideration. In addition to a dual division among the towns, there is a dual division of clans. One is called *Hathagalgi*, or "Whites," and embraces generally the Wind, Bear, Bird, Beaver, and their subdivisions. I know of no case in which the Wind and Bear are anything else, but among the *Alibamu* and *Hitchiti* the Bird and Beaver belong on the other side, while the Panther people are Whites in *Tukaba'tci* and some other towns, and the Alligator are Whites in *Paḡan-talahāsi* and several more. For obvious reasons white men adopted into the tribe were usually placed in one of the white clans, most often the Wind. The other division of the clans is usually called *Tciloqoga'igi*, "People of a different speech." It embraces the Raccoon, and the allied Potato and Fox, the *Oktayatcalgi*, the Deer, and usually the Alligator and Panther. As already stated, the Bird and Beaver in one or two towns also belong to this side. It includes, too, the Snake and *Kapitsalgi*. The symbolism of the Creeks would lead us at once to suspect that these white clans are in some way connected with the white towns and the *Tciloqoga'igi* clans with the red towns. This is probably a fact, but it is not so consistently shown as would be expected. Thus the chiefs of most white towns are from white clans, but *Weogŭfki* and *Paḡan-talahāsi* have *Oktayatcalgi* chiefs, while, on the other hand, *Kowita* has a Wind chief and *Łaplaqo* a Bear chief, as have some of the other red towns. In practice games the *Hathagalgi* and *Tciloqoga'igi* were always opposed.

On studying the clans from which the various chiefs are drawn we find that certain clans are much more prominent than others. Thus, far more towns take their chief from the Bear than from any other single clan. Second on the white side is the Bird. Among the *Tciloqoga* clans the most prominent is the Raccoon, the "royal" clan of *Tukaba'tci* and said to have been anciently the leading *Hitchiti* clan, and the *Oktayatcalgi*, leaders in *Eufaula*, *Weogŭfki*,

Pakan-talahási, and one or two other places. Next in importance to the clan of the *mí'kalgi*, or "chiefs," is that of the *hēnihalgi*,¹ or "second men." At the time of the busk the second men are constant companions of the *mí'kalgi*. Every person of the chief's clan and every person sent to do an errand of any consequence must be accompanied by one of these *hēnihalgi*. At Tukaba'tci the Wind people are the *hēnihalgi*, and the Tukaba'tci affirm that this clan was once the *hēnihalgi* in all towns. Moreover, their opinion is confirmed by a considerable body of evidence and by the fact that they are still the *hēnihalgi* in by far the largest number of towns. Next to the Wind, the Bird and Deer seem to be favorites as *hēnihalgi*. It is noteworthy that the Panther clan is rarely either the chief's clan or that of the *hēnihalgi*, while the Deer seldom appear in the former capacity. In some towns, notably Tukaba'tci, the Deer is considered a "choice" clan, a regard which appears to have something to do with the importance of deer in the old Creek food supply.

The social organization of the Creeks is thus shown to be complicated, indicating a considerable period of development. We see clearly that it has resulted from a combination of a number of tribes speaking Muskogee with others employing different languages, mainly those of the same stock. The dual division of towns seems not to be due in this case to a union of distinct tribes, because the non-Muskogee tribes are found on both sides, and there is a strong tradition that Kowita and Kasi'ta, now in opposite fires, separated from one original Muskogee tribe. An attempt to correlate the dual division of clans with the dual division of towns is not altogether satisfactory. Still the white clans are certainly associated by some Creeks with the white towns and the Tcloqoga clans with the red towns. The regulations regarding exogamy and endogamy show clearly that there is no necessary connection between these and the clans. Their Westernmarckian character will be noticed, but it should be remembered that the exogamic laws, instead of being based on a natural disinclination to mate on the part of children reared together, are due to a *disinclination to have them mate* on the part of their elders.

¹ This word, along with another title, *hola'ta*, not mentioned in this paper, is found in Timucua, the ancient language of Florida, and is probably derived from it.

In such a study as this it is interesting to compare the clans and towns and to see whether there is any tendency for certain clans to appear in some towns rather than in others. This investigation is by no means complete, but a few facts may be stated. The Wind, Bear, and Bird seem pretty generally distributed, but the Beaver, as distinct from the Bird, is characteristic of the Tulsa towns, including "Hickory Ground." The Fish seems to be a Lower Creek clan, and the Snake, Kapitsalgi, and Pahosalgi are found only in Hitchiti and Seminole towns. The Mole and Toad are almost entirely confined to Hitchiti and Talwa la'qo. The Potato is more conspicuous among the Lower Creeks, and the Raccoon among the Upper Creeks. The Eagle also seems to be characteristic of Upper Creek towns, particularly Tukaba'tci.

A noteworthy fact brought out by this investigation is the tendency on the part of the people concerned to invent an explanation for an association which exists between two or more clans, and the existence of such association without any apparent reason. Thus, if an Indian not acquainted with the Turkey clan is asked about its affinities, he says at once that it must be with the Bird clan, when, in fact, it is with the Alligator, and no reason has ever been offered for this association. In the same way it is asserted that the Beaver and the Alligator should go together because both are water animals, but actually the Beaver is associated with the Bird. In the same inexplicable way the Toad and Mole are associated with the Deer. The word *pahosa* is said to sound as if it referred to the wolf, yet the Pahosalgi clan is connected with the Deer. Evidently most relationships were due to causes other than any relationship between the names of the animals borne by the clans in question, although, as in the case of the Panther and Wildcat, Bear and Wolf, Wind and Skunk, there were exceptions.

THE ORIGIN OF TOTEMISM

By A. A. GOLDENWEISER

IT is now almost half a century since McLennan launched the conception of totemism on what proved to be a most spectacular ethnological career. And throughout that period, with scarcely any interruptions, the problem of the origin of totemism remained the most popular, as well as the most abused, of all totemic questions. I need scarcely add that new theories continue to appear at an alarming rate and that the fight over them rages as furiously as ever.

Many of the theories advanced were good, in the sense that they indicated a plausible starting point for the totemic process; all the theories were bad in so far as they pretended to have revealed the one and only starting-point of totemism. Hill-Tout regarded the religious aspect of the totem as the trait it had in common with the individual guardian spirit and the animal protector of a religious society; but he also held this religious element to be the only constant feature of totemism, and sought the origin of the institution in the individual guardian spirit. He succeeded in making out a fairly good case for his theory in so far as it referred to the *suliaism* of the Salish tribes of the interior of British Columbia. Haddon's hypothesis, also, need not be discarded as impossible, for among the Penobscot, according to Dr Speck's unpublished notes, there existed a regulation of hunting according to localities and animals, which approximated Haddon's idea of the origin of totemism. That animal taboos restricted to definite clans or localities should ever have been the first step in totemism, no one to my knowledge has maintained. Yet this hypothesis would have been as acceptable as any of the others. The prominence of the taboo aspect of totemism among many tribes of the African Bantu, especially, however, such features as the paternal taboo-totems of the Herero, Bawili, Tshi, and Bushongo, advances

the claim of the as yet unadvocated taboo-theory of the origin of totemism to a hearing on a par with other theories. To Frazer we owe at least three "origins." One was suggested by his studies in bush-souls. Spencer and Gillen's revelations about the magical ceremonies of the Aranda called forth another. The Aranda, again, with their curious beliefs about the conception of children, are responsible also for the third and last theory, the conceptional theory of the origin of totemism. The evidence accumulated since the magical ceremony theory first saw light did not serve to enhance its probability even with reference to the Aranda themselves. As to the bush-soul and the conceptional theories, they are variants of the view that derives clan totemism from spirits originally connected with individuals, whether as guardians or otherwise. Even in its general form, this view, as indicated elsewhere, is among the least plausible ones; while in the form of a bush-soul or of a conceptional theory, it becomes, in proportion to its particularizations, even less plausible. Then there is the late Andrew Lang's theory, which derives totemism from animal and plant names given to social groups, originally local aggregates, later clans. Animal names of groups of men are indeed so common a feature not alone in primitive society, and the presence of such names in totemic communities is such a persistent, although not universal, feature of the latter, that Lang's theory, although erroneous in its universalist pretensions, may perhaps be accorded a stronger claim to such universality than any of the other theories.

At this stage of the discussion it will be well to remember that when we speak of a particular feature as constituting the origin of totemism, all we may mean is that this particular feature appeared first in the social organization that later developed into a totemic complex. Totemic complexes could not have come into being full-grown and embracing a complicated set of religious, social, mythological, ceremonial, and artistic features. The features must have been acquired one by one; some, like the crest and rank qualities of the "totems" of British Columbia, bear unmistakable evidence of late origin, while of the features reviewed above each may have appeared before the others in a number of instances.

Apart from this chronological priority, no significance should be attached to the assertion that a certain feature was the origin of totemism. These origins are not embryonic totemic complexes which carry within them the potentialities of future development. Nor do they throw any light on the specific psychological conditions, the particular atmosphere of thought and emotion on the basis of which a totemic organization may spring up. The origins of Lang, Frazer, Haddon, and Hill-Tout are nothing but starting-points. And it goes without saying that the further piling up of hypothetical developmental stages in order to bridge the gap between the assumed origin and an actual live totemic complex is merely multiplying difficulties and depriving the hypothesis of that basis of probability which may often be granted to the "origin" itself, in the sense of a starting-point.

Without overstepping the bounds of well-ascertained ethnological and, we may add, historical facts, we may insist that the growth of a totemic community, like that of any other institution, depends on the coöperation of so many different agents, both "inner" and "outer," and is colored by so many unique, individual happenings, that any attempt to reconstruct the process on hypothetical foundations is nothing short of foolhardy.

Thus the question arises: Has the vast store of ingenuity exercised in the excogitation of these totemic origin theories, has the heavy labor of furnishing them with the necessary accessories of fact, analogy, and suggestion, been repaid by the results? No one who has followed totemic discussions for the last quarter of a century or so will hesitate to answer this question in the negative. Our comprehension of totemic phenomena has not been enhanced by these origin theories; at best they have proved of indirect value by stimulating totemic research. The futility of hunting for first origins, whether totemic or not, can best be realized if one imagines for a moment that all first origins of human institutions were revealed. They would no doubt present a sensational picture, full of local color and whimsicality, of improbabilities, and even of "impossibilities." But one may well doubt the scientific value of such a revelation. First origins are a matter of "chance," they

are unique individual events presenting at best a gossipy interest. The search for first origins, like the search of the alchemist, is vain.¹

Without challenging the above proposition that all hypothetical reconstructions of specific processes are futile, we may well ask whether some general and fundamental principle involved in all totemic processes could not be found. The discovery of such a principle would further our comprehension of totemic phenomena and supply a valuable guide for the study of those totemic processes which may still be available for first-hand research.

I propose in what follows to direct attention to the presence of such a principle. Let us remember that in all totemic communities we find a group differentiated into clans which display sets of totemic features different in specific content but homologous in form and function.² Can it be conceived that these features developed in the different clans independently? When one considers that the clans of a totemic organization are so interwoven as to constitute, to all appearance, an integral system; and that the homology of the clans is objectively, for the observer, as well as subjectively, for the totemite, the most patent fact about a totemic organization, one cannot but realize that any such series of independent developments lies entirely beyond the range of probability. But if the assumption of the independent development of totemic clan features is rejected, we must accept the only alternative assumption of a process of diffusion. On the other hand, the totemic features cannot be regarded as a contemporaneous growth;

¹ It will be noticed that throughout this discussion totemism was assumed to be of polygenetic origin. The reasons for this view have been presented elsewhere (see "Totemism, an Analytical Study," *Journal of American Folk-lore*, 1910, pp. 264 sq.). In an article on the origin of exogamy (*Archiv für Rechts- und Wirtschaftsphilosophie*, April, 1912), as well as in his recent *Die Elemente der Völkerpsychologie*, Wundt insists that the remarkable similarity of totemic phenomena all over the world, as disclosed particularly by Frazer's survey, inevitably leads to the assumption of an essential unity of totemic institutions. But this similarity may also be due to convergence under the directing influence of such a factor as the tendency for specific socialization (cf. my "Totemism and Exogamy defined: a Rejoinder," *American Anthropologist*, 1911, p. 596; and "Andrew Lang on Method in the Study of Totemism," *ibid.*, 1912, p. 384).

² "Andrew Lang on Method in the Study of Totemism," *American Anthropologist*, 1912, p. 384.

as regards the order of their appearance in a totemic complex, the features must be conceived of as a temporal series. Guided by these two assumptions, we may now visualize the totemic process at an extremely early stage of its growth. The tribe is differentiated into a number of social units or clans. The psychic atmosphere (Thurnwald's *Denkart*) is saturated with totemic possibilities.¹ The stage is set for a first origin of totemism. Most totemic origin theories may claim the right of supplying one, but it is not with them we are here concerned. The first origin—animal name, taboo, sacred animal, myth of descent—is assumed to have occurred in one, or in a few, of the clans. Still there is no totemism. But presently, with the psychological conditions remaining favorable, another clan adopts the feature. Then another, and another. Finally all the clans have it. The features in the various clans are not identical but they are equivalent, and they become specific clan characteristics,—become socialized. The totemic process has begun.² In the same way other features begin to develop. They may arise in one or another clan through "inner" growth, or they may come from the outside, through contact with other tribes. No sooner is a new feature evolved or adopted by a clan than it starts on its round of diffusion until all the clans have incorporated it. Thus the totemic organization grows and increases in complexity. Meanwhile, each feature in a clan stands for functional solidarity,

¹ A quarter of a century ago Andrew Lang pointed out that totemism must have arisen in a psychic atmosphere congenial to its inception and growth. In a paper read before the British Association for the Advancement of Science (Portsmouth, 1911; see abstract in *Man*, October, 1911) I referred to the analysis of the psycho-sociological conditions underlying totemism as the ultimate and most fundamental of totemic problems. The theoretical principles involved in all such problems were ably discussed by Lévy-Bruhl in *Les fonctions mentales des sociétés inférieures*, while a first constructive attempt in this direction, with reference to specifically totemic studies, was made by Thurnwald (see his "Die Denkart als Wurzel des Totemismus," *Korrespondenz-Blatt der deutschen Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*, Bd. XLII, pp. 173-179).

² It must further be noted that the diffusion of the feature does not here proceed from individual to individual merely; which is, indeed, the way in which every custom spreads through a community. The individuals, to be sure, are the ultimate units to whom refer the functions for which the totemic features stand. But the diffusion of totemic features proceeds from clan to clan; and the individuals of each clan, when their turns arrive, do not adopt the feature itself but its homologue.

and as the number of features multiplies, the solidarity increases. On the other hand, the homology of the clans also gains in complexity and completeness, and the realization of such homology, at first no doubt unconscious, may tend to rise into the consciousness of the totemites. It need not be assumed that a new feature always appears in the same clan, but it does not seem improbable that such a tendency should develop. One or a few clans may thus assume the function of setting totemic fashion.¹

In the early days of a totemic complex the diffusion of a new feature throughout the clan system must be a slow process. But as each clan consolidates through the continuous superposition of common functions, and as the equivalence of the clans progresses with the addition of every new feature with reference to which the clans become homologous, this process of diffusion must become increasingly rapid and smooth. As feature upon feature springs up in one or another clan, their spread to other clans becomes a traditionally approved procedure, and the course and direction of the diffusion may also become fixed and stereotyped.²

¹ It ought to be possible, even at this late hour, to ascertain in how far this conception is justified by actual happenings in totemic communities.

² A reader conversant with the subject will probably have observed that the assumption of a pre-existing clan system at the inception of a totemic complex could not be justified on the same ground as the assumption of a first origin. The procedure is, indeed, artificial. For part at least of the totemic process may be conceived as antedating the formation of a hard-and-fast clan system, and having its source in the loose local organization out of which every clan system must have sprung. In the course of social evolution the transformation of such loose local groups into a clan system must have occurred innumerable times. With increasing solidarity the local groups would gradually assume the character of at first vague social units. Through intercourse and intermarriage between the groups, with or without exogamy, the individuals of the groups would become distributed in the different localities. Thus a foundation would be laid for a clan system, which in time would become fixed and rigid.

It is by no means improbable that in certain cases the totemic process began while the groups still had their original local character. The process, to be sure, must have been an exceedingly slow one. The multiplication of features; the consolidation of each group; the rise of a sense of equivalence between the groups,—these are aspects of the totemic process that could not find in local communities the material and spirit for totemic transformations, which are so plentifully supplied in a clan system. In the course, however, of the redistribution of the groups referred to above, the totemic features and tendencies may have proved powerful agents in furthering the differ-

The central point of the above theory of the origin of totemism lies in the conception that the building up of a totemic complex consists of a series of totemic features which appear one by one (or possibly in small groups), spread from clan to clan, become socialized in the clans and absorbed in the complex. Each new feature, on its appearance in a clan, becomes a pattern presently followed by other clans until the wave of diffusion has swept over them all. The theory may thus be fitly called *the pattern theory* of the origin of totemism. It may be regarded as a compromise between the views of those whose thirst for interpretations cannot be quenched by anything save a first origin, and the views of those who do not believe in any hypothetical reconstructions. Attempts at reconciliation by compromise are seldom successful in science, and the theory seems to be doomed to rejection by both camps. I may therefore be permitted to emphasize the two aspects of the theory which, to my mind, should commend it to the attention of totemizing ethnologists. Being convinced that the search for first origins is a vain pursuit, I eliminate from my theory all assumption as to the specific character of the first origin of a totemic complex. I simply assume one. The second important aspect of the theory is the conception of the waves of diffusion through which each new feature is assimilated by the complex. This conception is purely hypothetical, that is, it cannot be substantiated by anything we know as actually occurring in totemic complexes, but it is supported by what we know of the psychology of social processes. It seems, in fact, to formulate the only way in which a totemic complex can come into being.

The theory offers a ready explanation of various totemic "anomalies." When one finds that one totemic community has only animal totems and another only bird totems, the tendency is to look for deep-rooted causes. It cannot, of course, be denied that some

entiation and consolidation of clans; whereupon the process would assume the character outlined in the text. Moreover, the totemic processes, before and after the formation of a clan system, would not differ in principle but rather in the rapidity and smoothness of its development. This note may thus serve as an amplification of the theory propounded in the text, without, however, modifying the latter in any essential particular.

peculiarity in the environment or beliefs of the group may lead to such special developments. The explanation, however, may also lie in the fact that in one community a few animal names, adopted by several clans, fixed the pattern, which was followed by the other clans; while in another instance, the same occurred with bird names. In still other numerous instances the character of the names did not become stereotyped until some animal, bird, and plant names were taken, resulting in the distribution of names most frequently found in totemic communities. Double totems, as among the Baganda, or linked quadruple totems, as among the Massim of New Guinea, can be accounted for along the same lines. Not that the double or quadruple totems need be assumed to have constituted the primary condition in these communities. In the early stages of their development these totemic complexes may have had the normal one-clan one-totem aspect. But presently some unconventional⁸ "cause" doubled the totems in one or a few clans; other clans followed suit; and so on.

It will, I trust, be seen that the pattern theory may be regarded as a theory of the origin of totemism only in so far as it represents an attempt to suggest the mechanism of totemic processes, or what the boy Maxwell would have called "the particular go" of totemic complexes.

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CERTAIN IROQUOIS TREE MYTHS AND SYMBOLS

By ARTHUR C. PARKER

A STUDENT of Iroquoian folklore, ceremony, or history will note the many striking instances in which sacred or symbolic trees are mentioned. One finds allusions to such trees not only in the myths and traditions that have long been known to literature, and in the speeches of Iroquois chiefs in council with the French and English colonists, but also in the more recently discovered wampum codes and in the rituals of the folk-cults.

There are many references to the "tree of peace" in the colonial documents on Indian relations. Cadwallader Colden, for example, quotes the reply of the Mohawk chief to Lord Effingham in July, 1684. The Mohawk agreed to the proposals for peace and their spokesman said: "We now plant a Tree who's tops will reach the sun, and its Branches spread far abroad, so that it shall be seen afar off; and we shall shelter ourselves under it, and live in Peace, without molestation." (Gives Two Beavers.)¹

In a footnote Colden says that the Five Nations always express peace under the metaphor of a tree. Indeed, in the speech, a part of which is quoted above, the peace tree is mentioned several times.

In Garangula's reply to De la Barre, as recorded by Lahontan, are other references to the "tree." In his "harangue" Garangula said:

"We fell upon the Illinese and the Oumamis, because they cut down the Trees of Peace. . . ." "The Tsonontouans, Gayogouans, Onnotagues, Onnoyoutes, and Agnies declare that they interred the Axe at Cataracuoy in the Presence of your Predecessor in the very Center of the Fort; and planted the Tree of Peace in the same place; 'twas then stipulated that the Fort should be used as a Place of Retreat for Merchants, and not as a Refuge for Soldiers. . . . You ought to take Care that so great a number of Militia Men as we now see . . . do not

¹ Colden, *History of the Five Nations*, reprint, p. 58, New York, 1866.

stifle and choke the Tree of Peace . . . it must needs be of pernicious Consequences to stop its Growth and hinder it to shade both your Country and ours with its Leaves."¹

The above examples are only a few of many that might be quoted to show how commonly the Iroquois mentioned the peace tree. There are also references to the tree that was uprooted "to afford a cavity in which to bury all weapons of war," the tree being replanted as a memorial.

In the Iroquoian myth, whether Cherokee, Huron, Wyandot, Seneca, or Mohawk, the "tree of the upper-world" is mentioned,

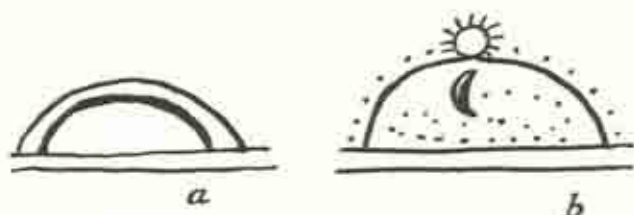


FIG. 59.—The pictograph of the sky-dome in the Walam Olum. *a* is interpreted "At all times above the earth." *b*, "He made them [sun and moon] all to move evenly."

though the character of the tree differs according to the tribe and sometimes according to the myth-teller.

Before the formation of the lower or earth world the Wyandot tell of the upper or sky world and of the "Big Chief" whose daughter became strangely ill.² The chief instructs his daughter to "dig up the wild apple tree; what will cure her she can pluck from among its roots." David Boyle³ wondered why the apple tree was called "wild," but that the narrator meant wild-apple and not wild apple is shown by the fact that in some versions the Seneca called the tree the crab-apple. The native apple tree with its small fruit was intended by the Indian myth-teller, who knew also of the cultivated apple and took the simplest way to differentiate the two.

With the Seneca this tree is described more fully. In manu-

¹ Lahontan, *Voyages*, vol. 1, p. 42, London, 1735.

² Connelley, W. E., *Wyandot Folk Lore*, Topeka, 1889.

³ Boyle, *The Iroquois*, in *Archaeological Report of Ontario for 1905*, p. 147.

script left by Mrs Asher Wright, the aged missionary to the Seneca, I find the cosmologic myth as related to her by Esquire Johnson, a Seneca, in 1870. Mrs Wright and her husband understood the Seneca language perfectly and published a mission magazine in that tongue as early as 1838. Her translation of Johnson's myth should therefore be considered authentic. She wrote:

"There was a vast expanse of water. . . . Above it was the great blue arch of air but no signs of anything solid. . . . In the clear sky was an unseen floating island sufficiently firm to allow trees to grow upon it, and there were men-beings there. There was one great chief who gave the law to all the Ongweh or beings on the island. In the center of the island there grew a tree so tall that no one of the beings who lived there could see its top. On its branches flowers and fruit hung all the year round. The beings who lived on the island used to come to the tree and eat the fruit and smell the sweet perfume of the flowers. On one occasion the chief desired that the tree be pulled up. The Great Chief was called to look at the great pit which was to be seen where the tree had stood."

The story continues with the usual description of how the Sky-mother was pushed into the hole in the sky and fell upon the wings of the waterfowl who placed her on the turtle's back. After this mention of the celestial tree in the same manuscript is the story of the central world-tree. After the birth of the twins, Light One and Toad-like (or dark) One, the Light One, also known as Good-minded, noticing that there was no light, created the "tree of light." This was a great tree having at its topmost branch a great ball of light. At this time the sun had not been created. It is significant, as will appear later, that the Good-minded made his tree of light one that brought forth flowers from every branch. After he had continued experimenting and improving the earth, "he made a new light and hung it on the neck of a being, and he called the new light Gaa-gwaa (gä'gwā) and instructed its bearer to run his course daily in the heavens." Shortly after he is said to have "dug up the tree of light, and looking into the pool of water in which the stump [trunk] had grown, he saw the reflection of his own face and thereupon conceived the idea of creating Ongwe and made them both a man and a woman."

The central world-tree is found also in Delaware mythology, though so far as I can discover it is not called the tree of light. The Journal of Dankers and Slyter¹ records the story of creation as heard from the Lenape of New Jersey in 1679. All things came from a tortoise, the Indians told them. "It had brought forth the world, and in the middle of its back had sprung a tree upon whose branches men had grown."² This relation between men and the tree is interesting in comparison with the Iroquois myth, as it is also conceived to be the central world-tree. Both the Lenape and the Iroquois ideas are symbolic and those who delight in flights of imagination might draw much from both.

The Seneca world-tree is described elsewhere in my notes as a tree whose branches pierce the sky and whose roots extend to the waters of the underworld. This tree is mentioned in various ceremonial rites of the Iroquois. With the False Face Company, *Hadigo''sā sho''o**, for example, the Great Face, chief of all the False Faces, is said to be the invisible giant that guards the world tree (*gaindowā'nē*). He rubs his turtle-shell rattle upon it to obtain its power, and this he imparts to all the visible false-faces worn by the company. In visible token of this belief the members of the company rub their turtle rattles on pine-tree trunks, believing that thereby they become imbued with both the earth-power and the sky-power. In this use of the turtle-shell rattle there is perhaps a recognition of the connection between the turtle and the world-tree that grows upon the primal turtle's back.

In the prologue of the Wampum Code of the Five Nations confederacy we again find references to a symbolic "great tree." In the code of Dekānāwī'dē, the Iroquois culture hero exclaims:

"I am Dekānāwī'dē, and with the Five Nations' confederate lords (*rodīyā'ner*) I plant the Tree of the Great Peace. I plant it in your territory, Adōdārho and the Onondaga nation, in the territory of you who are Fire-keepers.

"I name the tree the Tree of the Great Long Leaves. Under the

¹ Journal of a Voyage to New York in 1679-80, by Jasper Dankers and Peter Slyter, translated in *Trans. L. I. Hist. Soc.*, vol. 1, 1867.

² With the New England Indians the idea was held that men were found by Glooskap in a hole made by an arrow which he had shot into an ash tree.

shade of this Tree of Peace we spread the soft, feathery down of the globe thistle, there beneath the spreading branches of the Tree of Peace."

In the second "law" of the code, the four roots of the "tree" are described, and the law-giver says:

"If any individual or any nation outside the Five Nations shall obey the laws of the Great Peace and make known their disposition to the Lords of the Confederacy, they may trace the Roots to the Tree, and if their minds are clean and obedient . . . they shall be welcome to take shelter beneath the Tree of the Long Leaves.

"We place in the top of the Tree of the Long Leaves an Eagle who is able to see afar; . . . he will warn the people."

In another place is the following:

"I, Dekānāwī'dē, and the union lords now uproot the tallest pine tree and into the cavity thereby made we cast all weapons of war. Into the depths of the earth, down into the deep under-earth currents of water flowing to unknown regions we cast all the weapons of strife. We bury them from sight and we plant again the tree. Thus shall the Great Peace, Kayē'narhē'kō'wa, be established."

These laws and figures of speech are evidently those which the Iroquois speakers had in mind when addressing "peace councils" with the whites.

Symbolic trees appear not only in Iroquois history, mythology, and folk beliefs, but also in their decorative art. The numerous decorative forms of trees embroidered in moose-hair and porcupine-quills by the eastern Algonquians, by the Hurons, and by the Iroquois appear to be attempts to represent the world-tree and the celestial tree, in some cases, with "all manner of fruits and flowers." Many, if not most, of the modern descendants of the old-time Indians, who copy these old designs, have forgotten their meanings, and some have even invented new explanations. A few of the more conservative, however, still remember the true meanings of their designs and from these much of interest has been learned. Nothing can be expected from groups who have merely borrowed the designs.

In examining samples of Iroquois decorative art one is immediately impressed with the repeated use of a pattern consisting of a semicircle resting upon two parallel, horizontal lines, having at the

top two divergent curved lines, each springing from the same point and curving outward like the end of a split dandelion stalk (see fig. 62, *b*). This design, or symbol, with the Iroquois represents the celestial tree growing from the top of the sky, or, more properly,

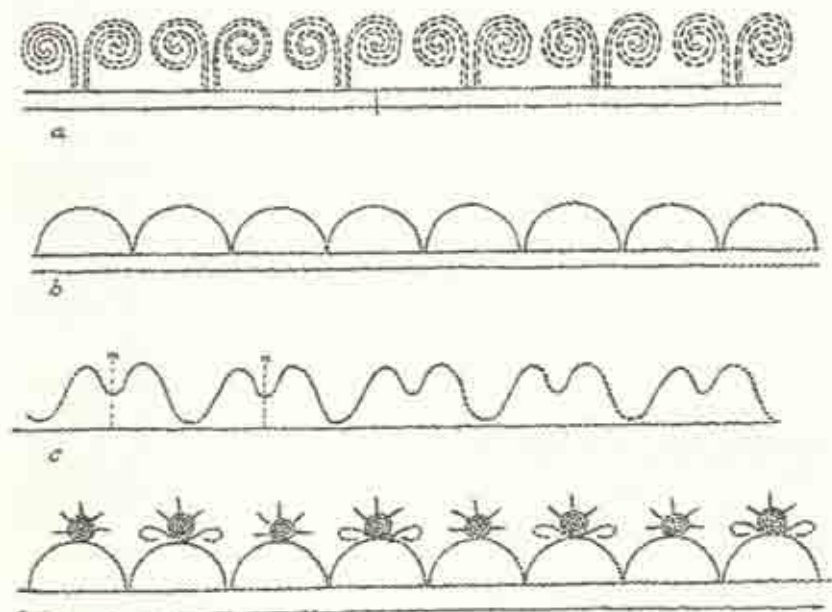


FIG. 60.—Borders embroidered in moose-hair on deerskin garments. (Seneca specimens in the New York State Museum.) *a* is the "two curve" pattern common in Iroquoian decoration. *b* represents a series of "sky-domes" resting upon the earth, the two parallel horizontal lines. *c* represents a series of the "trees" of Iroquois symbolism. The unit of the design is indicated by *m-n*. *d* shows a series of suns and celestial trees resting on the sky-dome.

from the bottom of the "above-sky-world" (*gā'ōñyā'gē'*). The two parallel lines represent the earth. This symbol is found with the same meaning among the Delawares. In the *Walam Olum*¹ parallel semicircles represent the sky-dome, though single semicircles also appear. Two parallel horizontal lines likewise represent the earth (see fig. 59, *a*).

With the Iroquois the sky-dome and earth symbols are employed

¹ Brinton, *Lenape and their Legends*, p. 170, Philadelphia, 1885.

as pattern designs for decorating clothing. Nearly always these symbols are associated with the celestial-tree symbol, though sometimes this is employed alone. These patterns appear embroidered in moose-hair, porcupine-quills, and beads as borders for leggings,

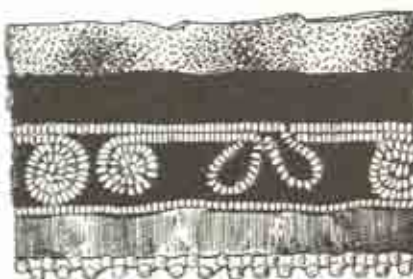
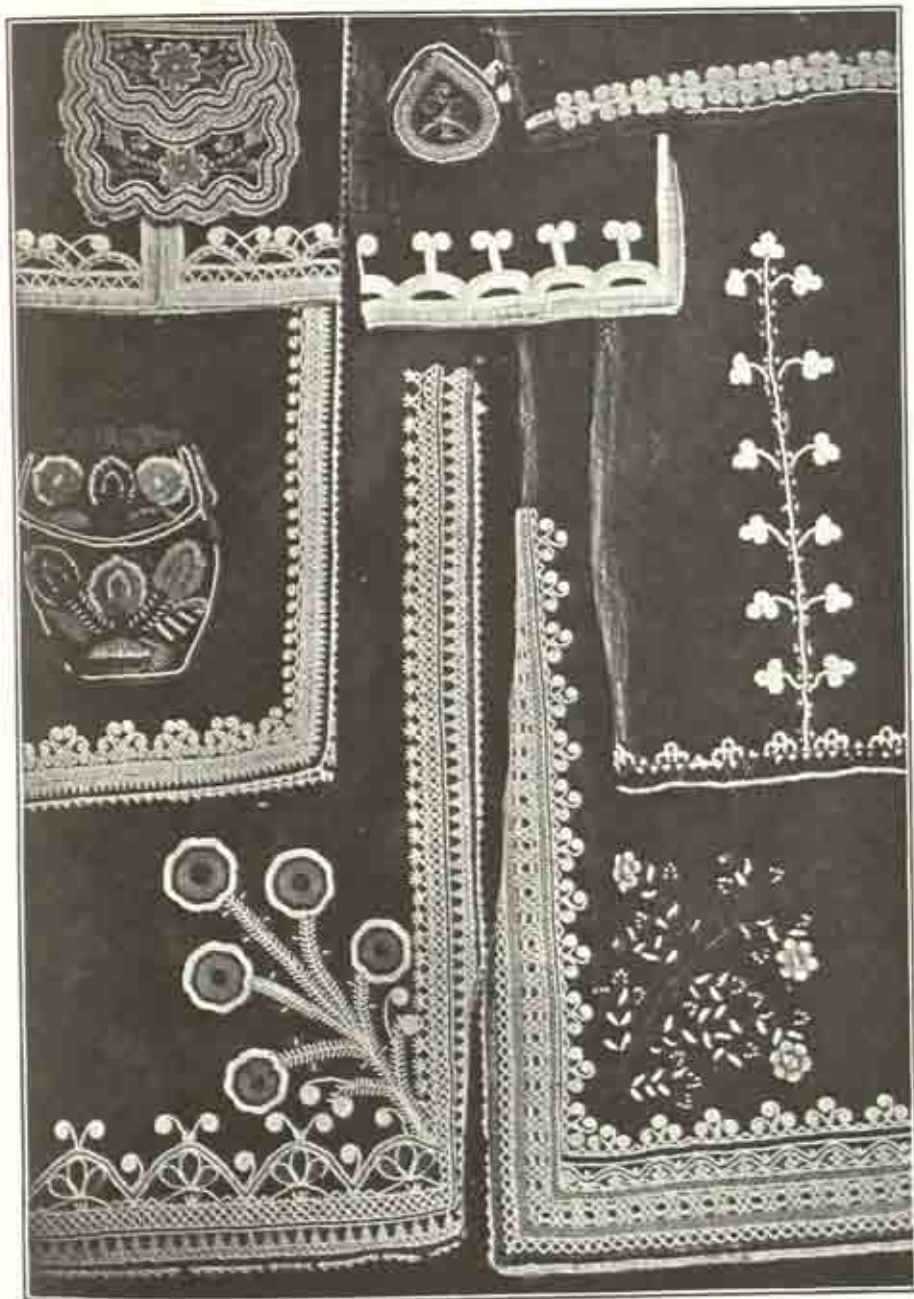


FIG. 61.—Portion of legging strip. The inward curving design at the top sometimes symbolizes sleep or death. (Specimens collected for the New York State Museum by M. R. Harrington.)

skirts, breech-clouts, and moccasins (see fig. 60). Occasionally the pattern is found on headbands and hair ornaments. In some cases, especially in examples of silverwork and beaded articles, it seems evident that the decorator has not the meaning of his pattern in mind. This is true of most of the more modern attempts to use it.

These outward curving designs, besides being symbols of the celestial tree, have a secondary meaning, that of life, living, and light. Curving inward upon themselves, they sometimes represent sleep and death. Figure 61 shows this design on a legging strip. In figure 62, *h*, it is used in conjunction with a sleeping sun. The Onondaga call the double-curve design *oē''shā'*, tendril.

In this connection it may be well to note that the "horns" wampum, when placed upon the body of a deceased civil chief, is curved inward, the two ends touching and forming the outline of a circle or heart. When the condoling ceremonial chief finishes his address and is about to lift the strands of wampum from the corpse to hand them to the successor, he turns the wampum-string in such manner that the ends point outward and away from each other. These particular symbols, while representing death and life respectively, are regarded as horn, not as tree, symbols. The wampum so



IROQUOIS BEADWORK ILLUSTRATING THE SKY-DOME AND DOUBLE-CURVE MOTIVES. (SPECIMENS IN THE NEW YORK STATE MUSEUM)

employed is called "the horns" (*ond'gasho'd*) and alludes to the symbolic title of the civil chief (*royaner*).

The celestial-tree symbol also appears as a trefoil. The third tendril, or branch, unfolds from the center of the tree (see fig. 62, *c*). A fourth branch is often used, when it appears as a double tree (see fig. 62, *d*). In figure 62, *e*, the night sun is represented above the world tree, and this sign is found to be the same in meaning as that shown in figure 62, *h*. In figure 62, *f*, the day sun is represented as shining at zenith above the world tree. In figure 62, *g*, the sun-

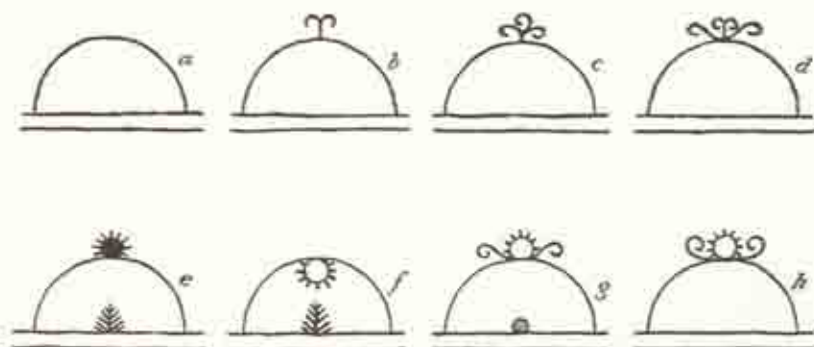


FIG. 62.—Various forms of the sky-dome symbol as employed in Iroquois moose-hair and quill embroidery.

above-the-sky is awake and perching in the celestial tree. All of these designs are found on borders of Iroquois garments, some of which are shown in plate xxxv.

Another important modification of the sky-dome and celestial-tree combination is that which represents the sky-dome with the celestial tree upon it and the earth tree within the dome below and resting upon a long intersection of an oval (possibly representing the turtle) and sending its long leaves or branches upward to the sky-arch. This design is shown on the beaded borders of the skirts represented at the bottom of plate xxxv, and especially well in the first skirt. Both of these specimens were collected by Lewis H. Morgan for the New York State Museum, where they now are. The same symbol is shown in the small ornament in the center at the top of the plate.

Sometimes the design is used as the motive of a rosette or other balanced design. Morgan figures several, and the *Report of the Director of the State Museum of New York for 1907* shows a picture of Red Jacket's pipe pouch ornamented with such a pattern.



FIG. 63.—Quill embroidery employing the two-curve unit. Seneca specimen.

The earth-tree, on the other hand, is less highly conventionalized. With the Iroquois, as with many other tribes of the forest area of North America, the Ojibwa for example, the ordinary tree sign is commonly used—that depicting the upward slanting branches of the balsam fir. Figure 66 shows an Ojibwa pictograph which is interpreted as "the big tree in the middle of the earth." The terminal buds on the conventionalized trees of the Huron moose-hair embroidery type resemble in form this balsam-fir symbol. The Hurons, indeed, call the bud "balsam fir."² The method of slanting the hair to form the design creates

There the ends of the tendrils are split and represented as conventional flowers. Figure 63 gives the outline of this pattern. In other instances the motive is built upward upon itself, as shown in figure 64. The first "tree" in this figure is copied from Lafitau¹ and the others from Mohawk moccasin toes.

One simple tendril, or arm, is occasionally used as a border, as is shown on the moccasin in figure 65. Even the Yuchi are familiar with this ornament, as has been shown by Dr Speck.³

With the Iroquois the celestial-tree symbol is represented generally by this arries-like figure.

¹ Lafitau, *Mœurs des Sauvages Américains*, tome II, pl. 3, p. 43, Paris, 1724.

² Speck, Frank G., *Ethnology of the Yuchi Indians*, *Anthropological Papers of the University of Pennsylvania*, vol. I, no. 1, 1909.

³ See Speck, F. G., *Huron Moose Hair Embroidery*, *American Anthropologist*, n. s., vol. 13, no. 1, p. 1.

the resemblance and in all probability causes the confusion. Used alone, the "bud" would be a tree if placed in proper position, but as ordinarily used by the Hurons, at the extremity of an embroidered branch (see fig. 67), it seems paradoxical to find a tree on the small end of one of its branches. This is discussed more fully hereinafter.

Figure 62, *e*, *f*, show the Iroquois "middle-of-the-world tree" as used in conjunction with the sky-dome and sun symbols.

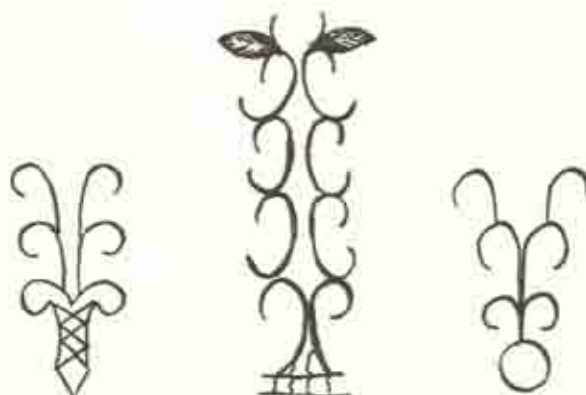


FIG. 64.—Various forms of the celestial tree. Here the unit is superposed to form the tree.

Another, and more elaborate, form of the "tree" as it appears in Iroquoian decorative art is a flowering plant or tree having conventionalized leaves (generally "long leaves"), branches, buds, tendrils, and flowers. In plate XXXVI is shown the flowering tree as embroidered in porcupine-quills on an Iroquois pouch collected by Lewis H. Morgan and now in the New York State Museum. It will be observed that here the diverging curved lines play a conspicuous part in the make-up of the tree. Like all Iroquois symbolic trees of the purely conventional type, this is exactly balanced on each side of the central line that represents the trunk or stalk.

With the Hurons these trees are likewise used as an adornment for bags and other things where a comparatively large surface is afforded. Dr Speck illustrates one of these trees in the article on moose-hair embroidery previously cited, and gives the Huron interpretation of the various parts of the tree. The Huron design

appears in figure 67, *a*, which is similar to the one illustrated by Dr Speck. It is interesting to note that with the Hurons the top-most flower is called not a flower but a star, thus suggesting some dim



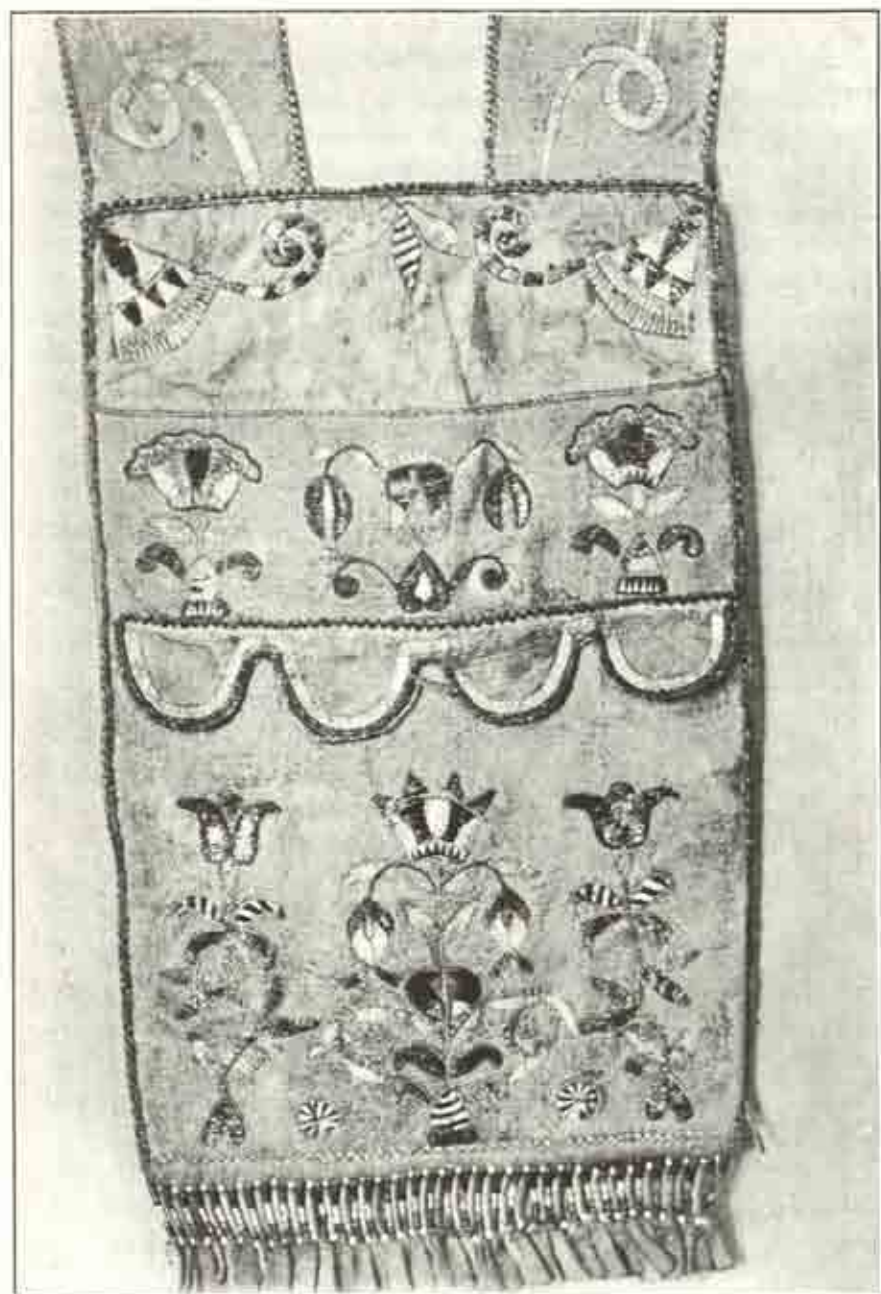
FIG. 65.—Seneca moccasin showing single tendril used as a decorative border.

recollection of the "tree of light." The confederate Iroquois made similar trees (see pl. XXXVI; also fig. 67, *b*), though they interpret some of the parts somewhat differently. With them the significance of the tree is recognized. Mr Hewitt describes the tree in his Onondaga creation myth.¹ His informants in relating the myth said: "And there beside the lodge stands the tree that is called Tooth (*One'djā*). Moreover, the blossoms this standing tree bears cause the world to light, making it light for men-beings dwelling there." This agrees with the Seneca version previously cited.

The "tree of peace" symbolically planted by Dekānāwī'dě, as has been noted, was called the "tree of the great long leaves." It will be observed that the "tree of light," in nearly every case where leaves are shown at all, has long, sword-like leaves. This is true in the case of the older patterns of the Hurons as well as of the Iroquois. The Hurons, however, now call these long leaves "dead branches" and the unopened flowers "balsam fir."²

¹ Hewitt, J. N. B., *Iroquois Cosmology*, 21st Ann. Rep. Bur. Am. Ethn., Washington, 1903, part 1, p. 151.

² Speck, *op. cit.*



IROQUOIS POUCH WITH EMBROIDERED PLANT OR TREE DESIGNS. (SPECIMEN COLLECTED BY LEWIS H. MORGAN FOR THE NEW YORK STATE MUSEUM.) ONE-HALF SIZE

The Hurons, as most of the Iroquois, have probably forgotten or confused the true names of the elements of their designs. These designs, with the Hurons at least, seem to have undergone some change, due to the necessities of trade—of working their patterns quickly in outline. Compare the Huron and the Iroquois forms in figure 67, *a* and *b*. It is most important to observe, however, that oftentimes, when the object of using a symbol is primarily for decorative purposes, the Indian artist or needle-worker gives parts of the design "pattern names" often at entire variance with the real meaning of the part but based on real or fancied resemblance. With the Hurons, with whom the decorative element is now of primary importance, this seems to have been the case. Indeed, Dr Speck does not say that the parts of the designs which he illustrates are symbols, though he gives the names which the Hurons told him. The Hurons are very likely making "trees of light" and do not know it, in this respect being similar to their Iroquois brethren. The designs are worked, as some of my Indian informants say, "because they are Indian," and likewise because they have become accustomed to them and because there seems nothing more appropriate to invent.

This instance suggests how, with change of environment, myths, symbols, and ceremonial rites may lose their earlier meaning and yet preserve their outward form.

The "two-curve" motive in Indian art is widely distributed throughout America. In many instances it seems to have meanings similar to that given it by the Iroquois, though there are other instances in which it has not. It is sometimes used, with a few simple additions, to represent the face of the thunderbird, or even the human face, at least the eyes and nose. In a more elaborate form it is found in the Fejérváry codex as a tree symbol, though a variation of the form in the Vienna codex makes the cross-section of a vase.

It is not strange that the simple outline should be found almost



FIG. 66. — "The big tree in the middle of the earth." From the Ojibwa *Midéwin*.

universally. It is one of those conceptions in art that would occur to any people independently. Many things in nature suggest it. It is not its outline, however, so much as its use as a definite symbol and its combination with others that gives it interest to the writer.

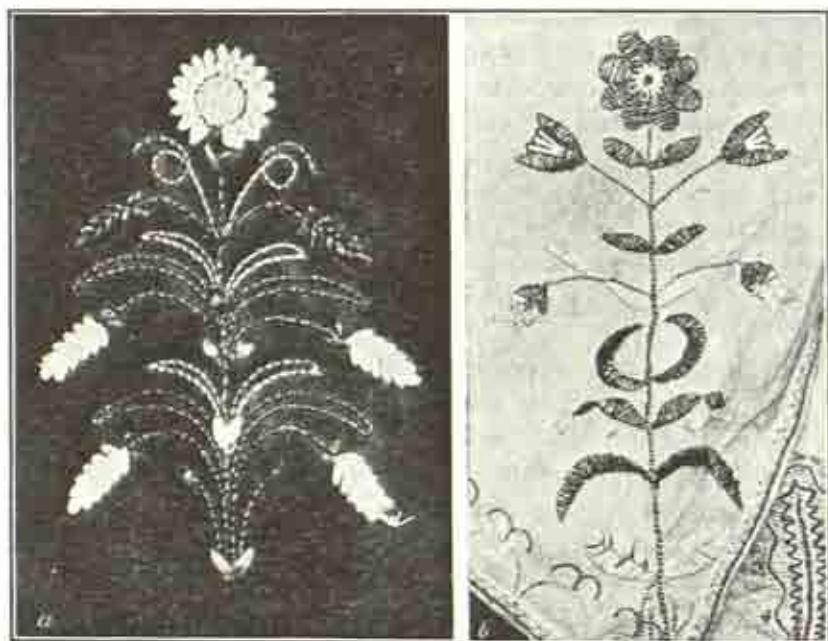


FIG. 67.—*a*, Huron moose-hair embroidery tree. (The large flower at the top is called a star by the Hurons.) *b*, Seneca porcupine-quill embroidery tree. (From photographs of specimens in the New York State Museum.)

The world-tree with its long leaves and luminous flowers is worthy of more detailed consideration. It seems to have been a deep-rooted concept with certain branches of the Algonquian stock and of the Iroquois, affecting not only their mythology and ceremonial language, but also their decorative art. Whether the idea has a deeper and more primitive meaning than here suggested the author does not pretend to know.

NEW YORK STATE MUSEUM
ALBANY, NEW YORK.

INTERNATIONAL CONGRESS OF PREHISTORIC ANTHROPOLOGY AND ARCHEOLOGY, GENEVA

(INTERNATIONAL ANTHROPOMETRIC AGREEMENT)

By GEORGE GRANT MACCURDY

THE Fourteenth International Congress of Prehistoric Anthropology and Archeology was held in the aula of the University, Geneva, September 9-14, 1912. On the evening of the 8th, Professor Eugène Pittard, president of the Congress, and Professor Edouard Naville, honorary president, received the members informally at the Athenæum. The attendance was good throughout the week, 149 delegates being present from 112 institutions representing at least 20 nations, 12 of which sent government delegates. A. Hrdlička, George Grant MacCurdy, and Charles Peabody represented the United States Government. The total enrolment was nearly 600.

More than six years had elapsed since the last Congress (Monaco) was held. In view of the immense progress made in the domain of the prehistoric during this time, the program was exceptionally long and interesting. As no provision had been made for a division of the program into sections, each treating a related group of subjects, it was necessary not only to limit each speaker to ten minutes but also to abridge the discussion far beyond a desirable limit. Fortunately, however, many of the papers were supplemented by generous exhibits of original specimens, casts, drawings, plans, photographs, etc., for which the University furnished suitable cases and ample and convenient wall space. The large collection of original specimens from Spain, including remains of *Elephas antiquus* associated with a Chellean and perhaps pre-Chellean industry, and the Celt-Iberian sepultures, exhibited by the Marquis of Cerralbo, deserve special mention. Other exhibitors, to all of

whom the thanks of the members present are due, will be named in the program that is to follow.

The following amendments to the constitution, recommended at the Congress of Monaco, were adopted at the first seance of the Geneva Congress and went immediately into effect:

"The official language of the Congress is French; it is used for the publication of the proceedings and the correspondence of the Commission of organization and of the Committee. However, the members of the Congress may, in their letters, communications, or readings make use of German, English, or Italian. Communications in these three languages shall be accompanied by a résumé in French, and the discussions before the Congress shall continue to be made in French.

"The maximum number of communications which any author may enter on the program is limited to four."

At the same seance an anthropometric commission, consisting of the following members, was appointed to continue the work of unification of anthropometric measurements begun at the Congress of Monaco¹ and to report at the close of the session: MM. Chantre (France), Czekanowski (Russia), Duckworth (Great Britain), Frassetto (Italy), Giuffrida-Ruggeri (Italy), Godin (France), Hillebrand (Hungary), Hoyos Sainz (Spain), Hrdlička (United States), Loth (Russian Poland), von Luschan (Germany), MacCurdy (United States), Manouvrier (France), Marett (Great Britain), Mayet (France), Mochi (Italy), Musgrove (Great Britain), Pittard (Switzerland), Rivet (France), Schlaginhaufen (Switzerland), Sergi (Italy), Sollas (Great Britain), Volkov (Russia), Weisgerber (France).

This commission held three meetings: on the 11th under the presidency of Manouvrier; on the 13th under the presidency of Sergi; on the 14th under the presidency of Duckworth.

The reporters appointed were Duckworth, Rivet, and Schlaginhaufen.

The entire report was adopted unanimously by the commission in the meeting of the 14th, and by the Congress on the same day in its closing session.

¹ *Compte Rendu, Congr. intern. d'anthr. et d'archéol. préhist.*, 13^e session, Monaco, 1906, tome II, pp. 377-394.

INTERNATIONAL AGREEMENT FOR THE UNIFICATION OF ANTHROPOMETRIC MEASURES ON THE LIVING

General Principles

- a. For measurements on living subjects, the upright position is adopted.
- b. The projection method is adopted, except in cases where special mention is made of a different method.
- c. For paired measurements, it is recommended to operate on the left side and to take bilateral measurements for the height of the acromion and the great trochanter above the surface on which the subject stands.
- d. Observers are urged always to indicate precisely their method and instrumentation.
- e. It is very particularly recommended to persons desirous of using anthropometry not to be content with a theoretical study of the measuring processes, but to learn them practically in the different laboratories where they are taught.

*Measures in Detail*¹

1. *Height*.—Subject standing on a horizontal firm surface (not leaning against a vertical wall or support), the arms pendent, the palm of the hand turned inward, the fingers vertical, the heels touching, the eyes directed horizontally. In this position measure the height of the vertex above the horizontal surface on which the subject stands.

*2. *Auditory opening*.—Starting point: the anterior portion of the notch between the tragus and the helix (point already adopted at the Monaco Congress, *op. cit.*, p. 391).

*3. *Chin*.—Starting point: median point on the inferior border of the mandible.

*4. *Presternal notch*.—At its lowest point.

*5. *Nipple*.—Start from its center. Exclude women with pendent breasts.

*6. *Umbilicus*.—Center of the umbilical cicatrice.

*7. *Pubes*.—Median point on the upper border of the symphysis pubis. In cases where it is difficult to locate this point, be guided by the lower ventral fold.

*8. *Spinous process of the fifth lumbar vertebra*.—To find this point easily, cause the trunk of the subject to be flexed, a position in which the spinous process in question is indicated by a prominence.

9. *Height sitting*.—Cause the subject to be seated on a stool, horizontal and firm, 30 to 40 cm. in height (this height varying with the height of the subject), the legs flexed. Place the back in contact with a vertical plane or with the anthropometer at the level of the sacral region and between the two shoulder-blades. The head should be in the same position as for the height standing. Measure the height of the vertex above the horizontal plane of the stool.

¹ Translated from Dr Rivet's copy. Measures marked by an asterisk are those for which the subject should be in the same position as for the height (measure No. 1).

10. *Height of the pelvis*.—The subject being in the position for the height sitting, measure the height of the summit of the iliac crest above the plane of the stool.

*11. *Acromion*.—Upper external border of the acromion.

*12. *Great trochanter*.—Upper border of the great trochanter.

*13. *Anterior superior iliac spine*.—Summit of this spine. In cases where it is difficult to find this point, follow Poupart's ligament to its point of insertion, which is precisely the spine in question.

*14. *Elbow*.—Radio-humeral line.

*15. *Wrist*.—Inferior point of the styloid process of the radius.

*16. *Extremity of the middle finger*.

*17. *Knee*.—Point on the upper margin of the internal tuberosity of the head of the tibia.

*18. *Ankle*.—Inferior point of the internal malleolus.

*19. *Stretch*.—Place the subject against a wall, the arms extended horizontally, the hands completely open, the palm forward, and measure the distance from the extremity of one middle finger to that of the other. If no wall is to be had, place the rigid anthropometer horizontally behind the subject, whose position should be the same as above described, and take the same measure. Whichever method is employed, demand of the subject the maximum extension.

*20. *Bi-acromial diameter*.—Maximum distance between the two acromions.

*21. *Bi-humeral diameter*.—Maximum distance between the two deltoid prominences (measure of secondary importance).

*22. *Bimamelon*.—Distance between the centers of the two nipples (same observation as for measure No. 5) (secondary measure).

*23. *Bi-iliac diameter*.—Maximum distance between the external margins of the iliac crests.

*24. *Bispinal diameter*.—Distance between the two anterior superior iliac spines (cf. measure No. 13).

*25. *Bitrochanteric diameter*.—Maximum distance between the external faces of the great trochanters. It is necessary to press firmly against the tissue.

*26. *External antero-posterior diameter of the pelvis*.—Starting points: in front, upper border of the symphysis pubis and in a median line; behind, summit of the spinous process of the fifth lumbar vertebra.

*27. *Transverse diameter of the thorax No. 1*.—Measured in a horizontal plane at the level of the xiphoid appendix. Take the average of the measures noted during inhalation and exhalation, or take the measure in an intermediate state.¹

*28. *Transverse diameter of the thorax No. 2*.—In a horizontal plane at the level of the upper border of the fourth chondro-sternal articulation (secondary measure).

¹ For measures Nos. 27-29 it is necessary to employ calipers with large blunt extremities, as the points of ordinary calipers would slip into the intercostal spaces, thus falsifying the results.

*29. *Antero-posterior diameter of the thorax No. 1.*—In the same plane as measure No. 27.

*30. *Antero-posterior diameter of the thorax No. 2.*—In the same plane as measure No. 28 (secondary measure).

*31. *Height of the sternum.*—Measured with sliding compass from the lowest point of the presternal notch to the base of the xiphoid appendix.

32. *Bicondylar diameter of the humerus* (secondary measure).

33. *Bistyloid diameter of the forearm* (secondary measure).

34. *Bicondylar diameter of the femur* (secondary measure).

35. *Bimalleolar diameter* (secondary measure).

*36. *Thoracic circumference.*—In a horizontal plane at the level of the base of the xiphoid appendix (secondary measure).

37. *Circumference of the neck.*—The smallest circumference.

38. *Circumference of the upper arm.*—The maximum circumference below the deltoid, the arm being in a state of repose.

39. *Circumference of the upper arm in contracted state.*—Maximum circumference at the same level as measure No. 38 (secondary measure).

40. *Maximum circumference of the forearm.*—At the level of the epitrochlear and epicondylar muscles, i. e., immediately below the joint-level.

41. *Minimum circumference of the forearm.*—Above the styloid processes of the radius and ulna.

42. *Maximum circumference of the thigh.*—At the level of the gluteal fold.

43. *Minimum circumference of the thigh.*—Just above the knee.

44. *Circumference of the calf.*—The maximum.

45. *Minimum circumference of the ankle.*

46. *Minimum circumference of the waist.*—Most restricted portion of the abdomen.

47. *Contour of the hand.*—The right hand is applied on a leaf of paper, the fingers moderately separated, the axis of the middle finger in line with the axis of the forearm. Mark the two extremities of the bistyloid line; from these points trace the contour of the palm and fingers with a pencil cleft longitudinally and held perpendicular to the paper. Mark by points the termination of each interdigital space and the metacarpo-phalangeal articulation at each side.

48. *Contour of the foot.*—The right foot is placed on a leaf of paper, the leg being perpendicular to the paper. Mark by a stroke the extremities of the malleoli and the metatarso-phalangeal articulation at each side; then trace the contour of the foot and toes in the same way as for measure No. 47, indicating the termination of each interdigital space. It is useless to trace the internal border between the malleolar and the metatarso-phalangeal points, as it would always be inexact.

49. *Height of the arch.*—The foot in the same position as for measure No. 48, measure by means of a vertical sliding compass the vertical distance from the plane of support to the upper border of the scaphoid (secondary measure).

The Anthropometric Commission as well as the Congress unanimously adopted the following technique and resolutions:

RECONSTRUCTION OF THE HEIGHT BY THE AID OF THE LONGBONES

To reconstruct the height by the aid of the longbones, measure the maximum length of these bones, with the exception of the femur, which is to be measured in position, and of the tibia, which is likewise to be measured in position, without the spine.

RESOLUTIONS

1. RESOLVED: that for the graphic representation of skulls, anthropologists employ the horizontal plane either of Broca or of the Frankfort agreement.
2. RESOLVED: that anthropologists publish integrally all their measures.

It was voted to recommend to the next Congress, which will no doubt be held at Madrid in 1915, an amendment to the constitution admitting the Spanish language on the same footing as English, German, and Italian (a similar recommendation to admit all the Slavic languages was rejected); also that hereafter the program be divided into sections: (1) the stone age, (2) the age of metals, and (3) anthropology properly so-called (somatology), with the understanding, however, that communications comprehensive in character should still be treated in general session.

The following resolutions were adopted.

- (1) Asking Slavic societies and authors to give résumés of their publications in French, German, or Latin.
- (2) That in view of the danger to originals from fire and theft, museums possessing important prehistoric or protohistoric objects made of precious metals be asked to have the same reproduced in metal or plaster.
- (3) That this Congress enter into amical relations with an international congress¹ now in process of formation and destined to cultivate particularly the field of ethnography and physical anthropology.

The Council in which this last resolution took shape were of the opinion that the name eventually to be chosen for the new congress should not be such as would lead to confusing it with that of the existing Congress, and that the two should not meet in the same year. The fifteenth session of the International Congress of Prehistoric Anthropology and Archeology will be held in 1915, at Madrid in case of an official invitation. The new international congress, as yet unnamed, will probably take final shape at the Washington meeting of the International Congress of Americanists, and the first session will perhaps be called for 1916.

¹ See *American Anthropologist*, N. S., XIV, 408, 1912.

The one fact that stood out most impressively at Geneva was the recent development of the prehistoric in Spain, on the one hand by the Marquis of Cerralbo and on the other by the Institut de Paléontologie Humaine in Paris, an international institution founded by the Prince of Monaco. Within the last five years the Marquis of Cerralbo has in his private capacity excavated 52 prehistoric stations and is now carrying on work at 10. Through his efforts the Government of Spain founded last June a Comisión de Exploraciones Espeleológicas, a branch of the Instituto Nacional de Ciencias Naturales. This foundation was inspired in a large measure by the success of the Institut founded by the Prince of Monaco. It is fortunate that prehistoric archeology should have the powerful support of two such influential men, both of whom received a special vote of thanks of the Congress. Another name that should not be overlooked in this connection is that of M. Louis Siret, a Belgian with large business interests in Spain, who for many years has made good use of his exceptional archeological opportunities.

If the present rate of progress continues along these lines during the next three years, the Madrid Congress will be a pilgrimage that no prehistorian can afford to miss.

The social functions of the week were especially well regulated and highly enjoyed by all present. Each member was given a "carnet" which contained not only the dates and places of the events but also free coupon tickets to and from each function. On Monday from 5 to 8.30 P.M. Professor Edouard Naville (honorary president) and Mme Naville received at their beautiful country place Malagny near Geneva. The whole of Tuesday afternoon was devoted to an excursion to Salève, where President Pittard gave an interesting talk on "The Prehistory of the Environs of Geneva." Thursday afternoon the City Council of Geneva received at the Ariana Museum; and in the evening Professor Oscar Montelius of Stockholm gave an illustrated lecture on "The Relations between Italy and Central Europe during the Bronze Age." A tour of the Lake of Geneva (or Lake Léman as the inhabitants of the Canton of Vaud prefer to call it) occupied the whole of Thursday, with luncheon in the historic Castle of Chillon offered by the State Coun-

cil of the Canton de Vaud, and dinner on board the boat offered by the Local Committee of the Congress. The city water-front was brilliantly illuminated for the return at 8 P.M. The city of Geneva was hostess Friday afternoon from 4 to 6 at the new Museum of Art and History (containing also important prehistoric collections). The same evening Professor Émile Cartailhac lectured before a large audience in Victoria Hall on "Man of the Caverns." The official banquet in the foyer of the Theater Saturday evening offered by the State Council of the Republic of Geneva and followed by a representation of a "Fête Montagnarde" closed the festivities of the week. It was made the occasion of the official announcement of the founding of an Institute of Anthropology at Geneva, that President Eugène Pittard was to be the director, and that in addition to the professorship, ample funds had been raised by private subscription to meet the annual needs of such an institute. In preparation for, and especially during the week of the Congress, Professor Pittard abundantly demonstrated his fitness for the new post to which he has been called; and Geneva did well to honor him in the presence of his colleagues assembled from all parts of the world.

About forty members accepted the invitation to take part in a five days' excursion (September 16-20) to important lake-dwellings and museums—Bevaix (Treytel), Neuchâtel, St Blaise, La Tène, Bienne, Bâle, Zürich, Lucerne, Lausanne.

The following is a complete list of the papers presented at the Congress:

- J. BAYER. The Glacial Periods (Theories of Penck).
Abbé H. BREUIL. The Subdivisions of the Upper Paleolithic and their Significance.
J. HILLEBRAND. The Paleolithic Cavern of Pesko, Hungary (Exhibit of original specimens).
L. CAPITAN. The Evolution of the Stone Industry during the Paleolithic.
Marquis of CERRALBO. Torralba, the most ancient station of Europe in which archeological remains have been found? (Exhibit of original specimens).
V. COMONT. (1) Chronology and Stratigraphy of Neolithic and Paleolithic Industries in the Holocene and Pleistocene deposits of Northern France, especially in the Valley of the Somme;
(2) A Mousterian Industry associated with a warm Fauna in the Valley of the Somme (Exhibit of original specimens).

- A. MOCHL. The Succession of Paleolithic Industries and Changes in the Pleistocene Fauna in Italy (Exhibit of original specimens).
- M. ANTON. New Quaternary Crania from Spain (Exhibit).
- L. CAPITAN and D. PEYRONY. The Recent Discovery of two Mousterian Skeletons at La Ferrassie (Dordogne).
- L. de HOYOS SAINZ. Crania of the Cro-Magnon Type from Old Castile (Exhibit of photographs and maps).
- R. R. MARETT. Prehistoric Man in Jersey.
- M. BOULE. (1) *Homo neandertalensis* and the Place it should Occupy among the Hominidae (Exhibit of casts).
(2) The Institute of Human Paleontology in Paris.
- V. GIUFFRIDA-RUGGERI. A Scheme of Classification for living Hominidae.
- COUNT BÉGOUEN. A new Cavern with Parietal Engravings in the Department of Ariège: the Cavern of the Tuc d'Audoubert (Exhibit).
- Abbé H. BREUIL and L. CAPITAN. Engravings on Stalagmite from the Cavern of Teyjat, Dordogne (Exhibit of original drawings).
- I. DHAKVENT. The First Step in the Prehistoric Art of Europe.
- M. HOERNES. The Prehistoric Art of Europe by Epochs and Regions.
- B. REHER. (1) The Age and Significance of the Prehistoric Engravings (Exhibit).
(2) Certain Series of New Prehistoric Engravings.
(3) Prehistoric Fortification in the Neighborhood of Geneva.
- S. REINACH. Some Specimens of Cavern Art.
- L. COUTIL. Tardenoisian, Capsian, Gétalian, Geneyenian (geometric flints) (Exhibit).
- L. DIDON. An Aurignacian Station near Sergeac.
- G. JOUSSET DE BELLESME. Comparative Technique in the Amygdaloid Type of Industry.
- The Abbés H. OBERMAIER and H. BREUIL. Excavations at the Cavern of Castillo (Spain).
- G. LALANNE. (1) The Venus of Lauscel (Exhibit of casts).
(2) Azilian Stations on the Shore of Bas Medoc.
- E. PITTARD. (1) The Prehistoric in the Valley of Rebières.
(2) Aurignacian Station: Les Rebières II (Exhibit of original specimens).
- E. PITTARD and R. MONTANDON. An Aurignacian Microlithic Industry (Exhibit of original specimens).
- R. A. SMITH. An Aurignacian Facies in England (Exhibit of original specimens).
- TH. VOLKOW. Recent Discoveries in a Paleolithic Station at Mélite, Ukraine (Exhibit of original specimens).
- M. BAUDOUIN. The Orientation of Dolmens.
- BARON A. BLANC. Excavations in Savoy: Preliminary Results, Azilian, Neolithic, Eneolithic, and Protohistoric.
- Marquis of CERRALBO. (1) Iberian Necropoles (Exhibit).
(2) Neolithic Monuments of Central Spain.

- H. COROT. (1) Prehistoric and Protohistoric Times in Alesia.
(2) The Excavation of a Tumulus at Minot, with Incineration "in domo."
- Abbé F. HERMET. (1) Statue Menhirs of Aveyron and of Italy.
(2) Bronze Spheroids.
(3) The Sepulchral Cavern of Nant.
- R. A. STEWART-MACALISTER. (1) Some Excavations recently made in Ireland.
(2) A Neolithic Cavern at Ghezer (Palestine).
- D. MACRITCHIE. (1) Cyclopean Constructions in Scotland.
(2) The Kayak in Northeastern Europe.
(3) Pygmies among the ancient Egyptians and the Hebrews.
- J. DE SAINT-VENANT. Some Curious Iron "Tranchets" of the La Tène Period.
- Mme. BARNETT. Prehistoric Stone Amulets from Teotihuacan, Mexico.
- A. HRDLÍČKA. The Remains in Siberia, Mongolia, and other parts of Eastern Asia of a Race that Peopled America.
- CHARLES PEABODY. The Present State of the Question of Diluvial Man at Trenton, New Jersey.
- N. H. WINCHELL. Prehistoric Man in Kansas. Read by Dr Peabody (Exhibit of original specimens).
- L. SIRET. Comparative Study of the Symbols represented on Protohistoric Monuments or Objects.
- M. BAUDOUIN. (1) Comparative Study of Pediform Sculptures and Engravings.
(2) Comparative Study of Engravings representing the Horse's Foot.
- J. DÉCHELETTE. Origin and Use of Iron in Europe.
- M. EXSTEENS. Industry of the Extinct Tasmanians.
- H. MÜLLER. (1) Stations with Azilian Facies from the Neighborhood of Grenoble.
(2) The Necessity of an International Commission on Archeological Nomenclature.
- Mme. CROVA. Neolithic Implements from the Coast of Mauritania, Africa (Exhibit of original specimens).
- H. S. WELLCOME. Prehistoric Discoveries in the Soudan (Exhibit).
- F. HUYBREIGTS. The Earliest Manifestations of Religious Ideas by Neolithic and Druidic Populations, according to the Discoveries made at Tongres, Belgium (Exhibit).
- L. SCHAUDER. Pitted Stones, their Origin, Significance, and Destination.
- G. B. M. FLAMAND. (1) Prehistoric Sahara.
(2) The Worship of the Sun in Prehistoric Times.
- F. SARASIN. Colored Pebbles from the Cavern of Birseck, near Bâle (Exhibit of original specimens).
- G. NICOLE. Prehistoric Vases from Thessaly.
- H. HUBERT. The Androphagous Carnivor of the Gandestrup Vase. Read by S. Reinach.
- G. REUBEL. An International Organization for the Anthropometry of Children.
- P. GODIN. The Relation between the Evolution of Growth and Puberty.

- S. REINACH. An Iberian Ornament (Exhibit).
H. M. AML The Status of Archeological Work in Canada.
L. BIDAULT DE GRÉSIGNY. Prehistoric Researches in the Saône Valley.
C. FLORENCE. How to Recognize the Age of Ferruginous Scoria.

YALE UNIVERSITY
NEW HAVEN, CONN.

THE LINGUISTIC POSITION OF THE PAWUMWA INDIANS OF SOUTH AMERICA

By ALEXANDER F. CHAMBERLAIN

ARTICLES like that of Mr J. D. Haseman, entitled "Some Notes on the Pawumwa Indians of South America," which appeared in the *American Anthropologist* for April-June, 1912, are a distinct addition to the scanty literature concerning many of the aboriginal peoples of the southern half of the New World. Of especial importance is the vocabulary of 123 words, quite sufficient to determine the linguistic position of these Indians who, according to Mr Haseman (p. 333), "are apparently unknown to science and live under conditions little or not at all affected by the civilization of the white man." The Pawumwa Indians live in a region of South America that has furnished many linguistic stocks and dialects. The Bolivian-Brazilian country between 10° and 20° south latitude and 58° and 70° west longitude has, at some time or other, embraced nearly a score of independent tongues. According to Mr Haseman, the hunting grounds of the Pawumwa Indians are on the Brazilian side of the Rio Guaporé, not far from Fort Príncipe de Beira, which is situated in the region of south latitude 12° and west longitude 65°, above the confluence of the Rio Guaporé and Rio Mamoré. The permanent village of the Pawumwa, Mr Haseman states (p. 338), is situated "on the headwaters of Rio São Miguel." At first sight, it seemed as if the Pawumwa represented a new and distinct stock of American aborigines, but this does not prove to be the case, the vocabulary collected by Mr Haseman serving to indicate the linguistic relationship of these interesting Indians with others already on record.

Among the Indian tribes of the Guaporé-Mamoré region of eastern Bolivia, concerning whom we know but little, are the Ité (or Iténès) and the Chapacura (or Tapacura). D'Orbigny¹ gives a brief account of the "Nation Ité ou Iténès" (pp. 307-308) and of

¹ A. d'Orbigny, *L'Homme Américain, Voy. d. l'Amér. Mérid.*, t. IV, Paris, 1839.

the "Nation Chapacura" (pp. 288-290). In the comparative vocabulary facing page 80 he records 23 words in Ité and Chapacura—the Chapacura terms for "father" and "mother" (*tiaia* and *mama*) and the Ité term for "evil spirit" (*tumêke*) are cited elsewhere. The statement is also made that the Quitemocas are a branch of the Chapacuras, their language showing some dialectal differences. Father Cardús,¹ in his work on the Franciscan missions of Bolivia, gives vocabularies of Iténès and Chapacura, taken from d'Orbigny. This seems to be all the accessible linguistic material.

The territory assigned to the Ité or Iténès Indians lies in north-eastern Bolivia around the confluence of the Rio Mamoré and the Rio Guaporé (also known as Rio Iténès), and on some of their smaller affluents, in the region of 12°-13° south latitude and 64°-66° west longitude. In 1831, according to d'Orbigny, they numbered some 1,000, all "wild," and roving considerably to the north and east. There were at that time also a few prisoners at Exaltación. Balzan, in 1892, locates the Iténès in the region of 12°-13° south latitude and 64°-65° west longitude.

The original habitat of the Chapacura Indians seems to have been the banks of the Rio Baures (Rio Branco), near the Guarayo lake, in eastern Bolivia, in the region of 15° south latitude and 62° 30' west longitude. The mission records sometimes term them *Guarayos* or *Huarayus*, a fact leading to their being mistakenly identified with the *Guaraní*, just as the name *Huachi*, with which they designate themselves, has caused another incorrect identification with the Paraguayan *Guachí*. In 1831, according to d'Orbigny, they were represented at the mission of Carmen de Móxos by some 300 individuals. To this stock belonged also some 700 Quitemocas, likewise some 300 "wild" Indians. Hervas cites the "Quitema" as an independent linguistic stock of the Chiquitan region, but d'Orbigny observes (p. 289) that "the language of the Quitemocas possesses many terms different from those of the Chapacuras, due perhaps to old relations with some other distinct people." It is with the Ité and Chapacura languages that the Pawumwa seems to be related, as the following data will indicate.

¹ J. Cardús, *Las Misiones Franciscanas entre los Indios de Bolivia, etc.*, Barcelona, 1886.

The Itenean and Chapacuran words from d'Orbigny may be here reproduced together with the corresponding words (where they happen to be given) in the Pawumwa vocabulary of Mr Haseman:

ENGLISH	Ité	CHAPACURA	PAWUMWA
Arrow	<i>pari</i>	<i>parami</i>
Bow	<i>kivo</i>	<i>chininte</i>
Cheek	<i>buca</i>	<i>urutarachi</i>
Ear	<i>iniri</i>	<i>tailatachi</i>	<i>tra'i'tei</i>
Eat, to	<i>caore</i>	<i>cahuara</i>	<i>ká+una</i> (I eat)
Eyes	<i>to</i>	<i>tucuchi</i>	<i>tákitei</i>
Fire	<i>iche</i>	<i>isse</i>	<i>i'teé</i>
Give me	<i>huiti</i>	<i>miapachi</i>
Hand	<i>uru</i>	<i>umichi</i>	<i>makuwamnatei</i>
Head	<i>mahui</i>	<i>upachi</i>	<i>átipéto?</i>
He, she	<i>comari</i>	<i>aricau</i>
I, me	<i>miti</i>	<i>huaya</i>
Man	<i>huataki</i>	<i>kiritian</i>	<i>pahú'nmucám</i>
Moon	<i>panevo</i>	<i>panato</i>	<i>pánawá</i>
Mountain	<i>pico</i>	<i>pecun</i>	<i>piki'n</i>
Old	<i>ucuti</i>	<i>itaracun</i>	<i>brahú'nua</i>
Sleep, to	<i>upuiira</i>	<i>huachiaé</i>	<i>trúmi?</i>
Sun	<i>mapito</i>	<i>huapuito</i>	<i>gwá'píru'</i>
Water	<i>como</i>	<i>acum</i>	<i>kám</i>
Wish, I	<i>imiré</i>	<i>mosi chacum</i>
Wish, I do not	<i>inimire</i>	<i>masi chacum</i>
Woman	<i>tana</i>	<i>yamake</i>	<i>jémarimá</i>
Young	<i>iroco</i>	<i>isokuem</i>

Comparison of these three languages shows that the words for 'eat,' 'fire,' 'moon,' 'mountain,' 'sun,' and 'water' are identical or practically identical in Ité, Chapacura, and Pawumwa, and that certain other agreements exist between Pawumwa and Chapacura. These amount to identities in the case of the words for 'eye' (Ité *to* may not be the stem-word), and, perhaps, also, 'ear' and 'head.' Longer vocabularies of the languages in question must be awaited to settle the matter absolutely, but the evidence here cited would appear to place the Pawumwa in the same linguistic group as the Ité and the Chapacura. The Ité and Chapacura have hitherto been listed as independent linguistic stocks, but in the vocabulary of 23 words given by d'Orbigny it will be noted that the words for 'eat,' 'eyes,' 'fire,' 'moon,' 'mountain,' 'sun,' and 'water' are

identical, or practically so, i. e., more than one-fourth of the total number, which certainly suggests something more than mere borrowing. Nearly the same number (six words are of the same character) in all three languages, and some other resemblances appear between Pawumwa and Chapacura. The evidence in hand thus suggests that Ité, Chapacura (with Quitemoca), and Pawumwa are branches of the same linguistic stock, or that Pawumwa is identical with Chapacura or with Ité, or perhaps that Pawumwa is more closely related to Chapacura than to Ité, as, indeed, d'Orbigny's vocabulary seems to suggest. A greater resemblance of Pawumwa to Chapacura may be argued also from the statement of d'Orbigny (p. 308) that Ité avoids consonantal endings in its words, something not characteristic of Chapacura. He says also that Ité is more "laconic" than Chapacura. The fact noted by d'Orbigny also that Chapacura has a considerable number of words terminating in *-m*, *-n*, etc., points to close relationship with the Pawumwa.

Provisionally it might be well to group Ité, Chapacura, and Pawumwa together as forming one linguistic stock, and, since we at present possess more material concerning the Pawumwa, the vocabulary of Mr Haseman being so much larger than the Ité and Chapacura vocabularies of d'Orbigny, it might be well also to assign, provisionally at least, to this linguistic family the name Pawumwan, constituted, on present evidence, of Ité, Chapacura, and Pawumwa.

In his vocabulary Mr Haseman includes the word *kabici*, with the meaning "bad man, dangerous, savage, enemy," and with the further information (p. 344) that "any Pawumwa could without hesitation identify the arrows—always shouting '*Kabici!*' when shown arrows from other tribes." It is probable that this word *kabici* is the same as *kabiči*, *kabixi*, *kabiši*, the appellation of an Arawakan tribe inhabiting, with the Paressi (also Arawakan), the source region of Rio Cabaçal, Rio Jauru, Rio Juruena, and Rio Guaporé, in the Brazilian Matto Grosso.¹

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¹ See M. Schmidt in *Zeitschrift für Ethnologie*, 1912, vol. XLIV, pp. 146-174.

COLUMNS OF INFAMY

By ROBERT FLETCHER

SOME years ago Rear-Admiral Greer, of the United States Navy, who had recently been in command of the Mediterranean squadron, told me that while in Genoa he observed, in a desolate spot, a stone pillar that excited his curiosity. There was an inscription on it, and in reply to his inquiries he was told that it was "*Colonna d'infamia*"—a column of infamy. No one could tell him anything of its origin, or of the person whose memory it was intended to dishonor. He visited the place a second time, and made a very careful copy of the inscription, which was in Latin, and of which some of the letters had been partly defaced by time or accident. This copy he kindly sent to me, and I devoted some time to the study of the broken letters, succeeding finally in restoring the inscription to my satisfaction. The literal translation is this:

"Let the memory of that most wicked man, Julius Caesar Vachero, be forever infamous, who, as he had conspired against the Republic, suffered righteous punishment by the severing of his head from his body, the confiscation of his possessions, the banishment of his sons, and the demolition of his house, in the year of Salvation, 1628."

If put in corresponding lines in homely English, it would read thus:

Curses upon the name bestow
Of Julius Caesar Vachero;
Who 'gainst his country dared conspire,
And lost his head by righteous ire;
His wealth confiscate, sons expelled,
No stone remains of where he dwelled.

I could find nothing about this luckless Vacchero in any work on Italy, excepting a brief notice of the conspiracy in Sismondi's *History of the Italian Republics*. Neither was there any reference to the pillar in any of the guide-books or descriptions of Genoa which I was able to consult. Clearly this was a case where the poet's line was applicable:

'Monuments themselves memorials need.'

I ascertained from the Catalogue of Books in the British Museum that in the *Archivio storico d'Italia*, a collection of historical documents of great rarity and importance, extending to nearly a hundred volumes, there is an account of this Vacchero conspiracy. Fortunately, a copy of this invaluable publication is in the Library of Congress, where it is considered to be one of the special treasures of the historical department. I have, with some care, examined its history of the conspiracy, the account of which extends through a hundred pages of the *Archivio*. The following is a very brief sketch of the affair which ended so fatally for its prime mover and held his name up to infamy for nearly three hundred years.

It is usual to speak of Italian history in the 12th and 13th centuries as that of the Free Cities; in the 14th and 15th centuries as the Age of Despots, to use Symonds' curt phrase; and in the 16th and 17th centuries as the period of foreign intrigue and domination. Genoa had passed through an experience like that of the other great Italian cities. In 1528 Andrea Doria, one of her most distinguished sons, succeeded in restoring her liberties to a certain extent, and the republic was established, with a Doge at its head. The tyranny of the son of the great admiral Giannetto Doria wrought many changes in the form of government, and at the time now spoken of the affairs of the state were practically controlled by an oligarchy consisting of certain families whose names were enrolled in what was known as the "Golden Book."

The Genoese, always a bold and rather turbulent people, were devoted to mercantile pursuits and the delights of money-making. In the fine arts their work bore no comparison with the achievements of Florence, Milan, or Rome. In public works of utility and magnificence, Genoa displayed grandeur and invention. Her harbors were protected by a gigantic mole, and a superb aqueduct brought water into the city from the Ligurian Alps.

Their reputation for greed and covetousness, combined with great audacity and courage, made the names of its citizens somewhat of a byword throughout Europe, and even in the last century Rivarol said of them: "Anywhere if you see a Genoese throw him-

self out of a fourth story window, do not hesitate to follow him—there will certainly be fifty per cent. to be made by it!"

At the time of the conspiracy of Vacchero, in 1628, the government, nominally a republic with a Doge at its head, was actually under the control of the 170 families whose names were inscribed in the Golden Book and who alone had the right to sit in council. There were at least 450 families equally noble, and possessed of vast hereditary estates and dignities, who were excluded from all power.

The "Act of mediation," as it was termed, was an agreement between Andrea Doria and the new republic which he established in his native city, by which the government was to be composed of those whose names were inscribed in the Golden Book. The act provided that there should be a yearly addition to this book of ten families—seven from the city of Genoa and three from the two Rivas. The dominant rulers contrived to elude the consequences of this provision. They selected unmarried men without the potency of family connections, or poor men who could not compete in influence with the wealthy members of the council. The Doge was selected from their own class, and the government of the city and the state was thus absolutely under their control. The arrogance of these dominant rulers was a continual source of displeasure to the nobles and merchants who were not their associates. When a member of the council appeared in the market place, all hats were to be doffed to him. When, as often happened, he was a man possessed of no great wealth or dignity, the haughty nobles of long descent, and the wealthy burghers, were exasperated to the highest degree at the humiliation imposed upon them. A trifling event connected with this custom drove Giuliano Fornari, a fiery young noble, into the conspiracy with Vacchero.

Julius Cæsar Vacchero was the son of a merchant of Genoa. He followed his father's occupation, and, by his shrewdness and daring, acquired a very large fortune. He was known as "*Mercadante richissimo*," the richest merchant of Genoa. He was a man of sombre disposition, somewhat affecting the Spaniard in his demeanor, for there was a strong Spanish party at that time in

Genoa. In his later years he always wore armor, and his palace was filled with retainers, "*bravos*" in the language of the day. This personal following was not at all unusual. It was retained only by the capacity to support these hirelings, whose daggers were always ready to avenge an affront offered their master, and the influence and wealth of the latter, assisted by the venality of the tribunals, generally sufficed to protect the assassin.

Vacchero's wife was Hippolita Rela, of a distinguished Genoese family. She was a high-spirited, noble lady, of whom her husband was proud and fond. In the hour of trial she showed herself worthy of his love.

Bitter epigrams were circulated, in which Vacchero's character was not spared, and, what stung his haughty temper more than all, his wife's fair fame was sneeringly traduced.

Charles Emmanuel, the reigning Duke of Savoy, had claims on Genoa which he was anxious to enforce. Knowing the influence which Vacchero's forcible character and immense wealth exercised, he opened communications with him by means of an adventurer known as the Count Ansaldo. An interview took place under extreme precautions of secrecy, and the part which the Duke was to assume in the event of the success of the conspiracy was arranged.

In the meantime, Vacchero sought by every means in his power to associate with him in his complot against the hated government such members of the families excluded from the Golden Book as were able to bring armed followers to his aid. He spent money lavishly among the poorer citizens, that he might attach them to him, and he increased his already large retinue of *bravos*.

The plan of the conspiracy was this: On the morning of the first of April, 1628, they were to attack the Public Palace, slay the German guards, and put to death the members of the Council. The government was then to be reorganized, under the protection of the Duke of Savoy, with Vacchero at its head as Doge.

As the momentous day approached, there were many dissensions among the conspirators. Vacchero desired to expel the tyrannical oligarchs and to establish the protectorate of the Duke of Savoy.

Fornari and his adherents had more selfish and less lofty purposes, and proposed to re-form the government after their own views. The leaders of the companies of soldiers and *bravos* cared only for the prospect of booty from the sack of the opulent city. It is not surprising that among such discordant elements one man should be found ready to play the traitor's part for the sake of gain. A Piedmontese captain, one Giacomo Ruffo, on the night of the 30th of March, obtained an audience of the ruling powers, and revealed the plot with the names of all the conspirators.

The Doge and Council were well nigh frantic with rage and fear. They got together their guards and followers, but they did not venture to attack Vacchero's palace, full, as it was, of armed men with so daring a leader. The preparations of the government soon made it evident that the plot had been discovered, and the leading conspirators fled from the city. It became a race with those who were captured as to who should be foremost in confessing all, and more than all, of the particulars of the complot. Everything was laid to the charge of Vacchero. He was the great tempter, the head and front of the conspiracy, and a reward of 4,000 crowns was offered for his capture.

Finding himself deserted by his friends and allies, he escaped from Genoa in disguise, and took refuge in a small country house, home of the parents of one of his humble followers. They, alarmed for the safety of their son, went out in the night and consulted with a neighbor as to the advisability of giving up the arch conspirator. The neighbor, an astute fellow, described as a "practitioner," whatever that may mean, quieted the old couple, and betook himself with all possible speed to Genoa, and offered to betray the hiding place of Vacchero to the authorities in consideration of the payment of the offered reward and a further promise of immunity for two conspirators. The terms were agreed to and one of the pardons thus obtained was given to the young peasant, the follower of Vacchero. The adroit "practitioner" had the audacity to sell the other pardon for the sum of 4,000 crowns to Fornari, one of the leading conspirators. The man's double-dealing was discovered and punished, and it would seem that the pardon thus dearly bought was

disavowed by the authorities, for in Del Torre's list of those who were tried, with their sentences, after Fornari's name comes the fatal word *decapitato*.

Vacchero, with twenty-two of his fellow conspirators, were speedily brought to trial. The Duke of Savoy, with much insistence, demanded their release, and boldly declared himself as the head of the conspiracy. Vacchero's wife, sons, and followers were all imprisoned. Hippolita, undismayed by the threat of torture, the ruin of her family, and the prayers of her father and mother, defied the judges to the last, and refused to betray any of the secrets of her husband. Of what became of the brave woman after the execution of her lord, the demolition of her palace, and the banishment of her sons, nothing is told. It seems certain that the sons were only boys, for if they had been young men, coming of such blood, they certainly would have figured in the list of conspirators. Let us hope that, with such a mother, the banished did not become bandits after the fashion of the time. The two words come from the same root—the *ban*—the proclamation which banished the criminals seldom failed to drive them into becoming *bandits*.

Of those who were tried, some were beheaded and others were sentenced to imprisonment for life. No details are given of the execution of Vacchero, except the simple word *decapitato* following his name, which leads the fatal list. The historian, Del Torre, gives what he calls the "epitaph," which, it is interesting to know, corresponds almost precisely with the inscription copied by Admiral Greer. The only variation is in the spelling of the name of Vacchero. In the "epitaph" and throughout the historical sketch the name is spelt with two c's, but in the inscription on the pillar, with only one.

We know from this latter source that Vacchero was beheaded, his vast possessions were confiscated to the state, his sons were expelled from Genoa and forbidden to return, his palace was razed to the ground, and a pillar of stone erected on the site in eternal reprobation of his treason.

We must judge Vacchero in the light of his own time. The

annals of Italy abound in just such daring attempts as his to seize the supreme control of the great cities. Had he succeeded, he might have figured in history with the Dorias, Sforzas, and Medicis—he failed, and there is only the column of infamy to record his name. The history of the Italian republics in medieval and later times was, in fact, a history of successful and unsuccessful treasons, and Sir John Harrington's famous epigram might have been well applied to them. No one age can fairly judge of what circumstances in another age would justify revolt. There comes a time when it is humanity, and not rights or charters, which is involved, and then we can join with the poet and say:

"The traitor to humanity is the traitor most accursed;
Man is more than constitutions; better rot beneath the sod,
Than be true to Church and State, while we are doubly false to God!"

List of works collected by Alessandro Manzoni relating to the foregoing subject, commencing with his own work.¹

- I promessi sposi, storia milanese del secolo XVII scoperta e rifatta. Edizione riveduta dall'Autore. Storia della colonna infame inedita. Milano, dalla tipografia Guglielmini e Redaelli, 1840-42. 8°, fig., 832 pag.
- Illustrata con disegni di E. Gonin, Massimo d'Azeglio, L. Bisi, ecc. Storia della colonna infame. Edizione accresciuta dalle Osservazioni sulla tortura di Pietro Verri. Lugano, tipografia della Svizzera italiana, 1843. 16°, 284 pag.
- Storia della colonna infame. Napoli, 1843 (nello stabilimento tipografico Capasso). 12°, 143 pag.
- Storia della colonna infame. Napoli, per Gaetano Nobile libraio-editore, 1843. 16°, 172 pag., con ritratto.
- Storia della colonna infame. Palermo, Frasconà Barbera, Clamis e Roberti editori, 1843. 16°, 111 pag.
- Storia della colonna infame di Alessandro Manzoni, aggiuntovi il Cinque maggio dello stesso autore. Napoli, si vende da Giosuè Rondinella, 1843. 16°, 120 pag.
- Storia della colonna infame. Palermo, presso Federico Garofalo, 1843. 12°, 108 pag.
- Storia della colonna infame. Edizione alla quale furono aggiunte, come appendice, le Osservazioni sulla tortura di Pietro Verri. Parigi, Baudry, Libreria europea, 1843. 12°, 367 pag.

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¹ From *Catalogo della Sala Manzoni*, 8°, Milano, 1890, pp. 23-24.

THE INDIAN LINGUISTIC STOCKS OF OAXACA, MEXICO

By WILLIAM H. MECHLING

INTRODUCTION

IN the year 1886 Dr Antonio Peñafiel collected vocabularies of native languages from all parts of Mexico, but about a third of the total number came from Oaxaca. The volume of these vocabularies that has been printed deals entirely with the well-known Mexican of the Central Plateau region and therefore is of less interest than the rest of the material. With the other four volumes into which Peñafiel divides his manuscripts nothing has been done, although it is hoped that they will soon be published by the Mexican Government. This paper and the accompanying map are based on these vocabularies, which Dr Peñafiel very kindly placed at the disposal of the writer during the winter of 1911-12, when he was the fellow of the Hispanic Society of America in the International School of American Archeology and Ethnology in Mexico City.

As above mentioned, the state of Oaxaca is better represented in this collection than any other. For this reason, and because of the complexity and confusion that exist concerning the linguistic stocks of that state, a study of the numerous vocabularies from this area seemed advisable.

No detailed or accurate map of Oaxaca has yet been published. The map used as a basis for the accompanying linguistic map is a manuscript geological map in possession of the Instituto Geológico of Mexico; this has proved fairly satisfactory, since all but seventeen places have been located on it.

The vocabularies are of two hundred and fifty words each. As they were all collected by different individuals, they are of course recorded with varying degrees of accuracy, and as the recorders had no previous experience in work of this kind, the vocabularies cannot be relied on for the determination of lesser dialectic varia-

tions, consequently it has been impossible in many cases to determine the finer linguistic divisions. In the case of the widespread Zapotecan language it was utterly impossible to determine the dialects, hence the older division of Orozco y Berra must suffice until a careful study of this language has been made.

Several maps showing the distribution of the linguistic stocks of Mexico have been hitherto published. The earliest (1864), and in most ways the best, at least for Oaxaca, is the "Carta Etnográfica de México" that accompanies Orozco y Berra's *Geografía de las Lenguas de México*. For the state of Oaxaca the greatest fault lies in the position given to Trique, which Orozco y Berra places in the southeastern part of the state, adjoining Chontal, instead of in the western part, near the Guerrero border.

Dr Nicolas León prepared a map which accompanies his paper on the "Familias Lingüísticas de México," published in the *Anales del Museo Nacional* for 1903. For Oaxaca, at least, this map is not so good as that of Orozco y Berra, for the author employs only four different colors, representing respectively the Mixteco-Tzapotecan, Maya-Quichean, Zoque-Mixcan, and Nahuatlán linguistic stocks. Dr León does not give any subdivisions of these on his map, while the Nahuatlán noted thereon is not Mexican, but Chontal.

Swanton and Thomas's map is much better, as it includes several additional stocks and subdivides each stock that consists of more than one language. It is also better than Orozco y Berra's map in respect to the location of Trique.

There is also a manuscript map, in possession of the Peabody Museum of Harvard University, which bears the title "Linguistic Stocks of the Indians of Mexico and Central America, by F. H. Gerodette, for the World's Columbian Exposition." It is based chiefly on Brinton and lacks many of the details given by Thomas and Swanton.

By far the best map of the languages of Oaxaca is one made by Sr Francisco Belmar for the International Congress of Americanists which met at New York in 1902. It is almost as correct as one could make it by coloring with solid blocks. All the languages are in their proper places and the outlines agree fairly well with those

we obtained by marking every village from which Dr Peñafiel procured a vocabulary. The only omission noted is that of the Mexican spoken in Pochutla. Belmar marks the other two places where this language is spoken.

In making the present map the writer has not employed solid blocks of coloring, as this method inevitably results in error, but each village has been colored according to the language therein spoken. The result is interesting, for it shows quite clearly that there are many areas that can not be said to belong to any continuous linguistic district, since villages in which various languages are spoken are scattered through them. It would be erroneous, for example, to color the area around Tuxtepec as Mexican, as Sr Belmar does, for only Tuxtepec is Mexican, while the surrounding villages are Chinantec and in all probability have been for at least several centuries, as we know by documents written soon after the conquest. It would also be incorrect to color any extensive area around Pochutla as Mexican—this immediate area Sr Belmar has not colored at all. This intersprinkling of villages is shown quite as clearly in the case of some of the languages other than Mexican, as can be seen by examining the map; and there will undoubtedly be more instances of it when additional work has been done.

CLASSIFICATIONS OF OAXACA STOCKS

Great confusion exists concerning the linguistic stocks of Oaxaca. There are as many variations as there are authors who have treated the subject.

OROZCO Y BERRA'S CLASSIFICATION

Orozco y Berra, our best authority on the distribution of the languages of Mexico, classifies the stocks of Oaxaca as follows:

- I. Familia Mexicana, Mexicano.
- II. Familia Huasteca-Maya-Quiché.
 1. Chontal.
- III. Familia Mixteca-Zapoteca.
 1. Mixteco.
 2. Chocho.
 3. Amusgo.
 4. Zapoteco.
 5. Cuicateco.

He was unable to classify Zoque, Huave, Mixe, Trique, Chinanteco, Mazateco, Chatino, Papabuco, and Solteco, and no lexical or morphological proofs are presented to support his classification of languages into the above-named families. Quotations giving the opinions of others are his only evidences.

PIMENTEL'S CLASSIFICATION

In the second edition of his *Cuadro Descriptivo y Comparativo de las Lenguas de México* (Mexico, 1874), Pimentel gives the following division of the families of Mexico:

I. Familia Mixteco-Zapoteco.

1. Mixteco.
2. Zapoteco.
3. Chuchon.
4. Popoleco.
5. Cuicateco.
6. Chatino.
7. Papabuco.
8. Amusgo.
9. Mazateco.

and, as doubtful members, Solteco and Chinanteco.

II. Familia Zoque-Mixe.

1. Mixe.
2. Zoque.

This second family he calls a mixed family, and states that it has some Mexican and some Zapotecan roots. He also says that the grammar is mixed.

III. Familia Chontal.

1. Chontal.

IV. Idiomas oriundos de Nicaragua.

1. Huave.

V. Familia Mexicana.

1. Mexicano.

LEÓN'S CLASSIFICATION

In 1902 Dr León published his *Familias Lingüísticas de México*, in which he groups the languages of Oaxaca into the following families:

1. Familia Nahuatlana.
 1. Chontal de Oaxaca.
2. Familia Zoque-Mixeana.
 1. Zoque.
 2. Mixe.
3. Familia Mixteco-Tzapotecana.
 1. Mixteco.

Dialects nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11.
 Tepuzculano, Amusgo, Mixteco bajo, Mixteco mon-
 tañés, Chocho ó Popoloco, Trique, Cuicateco,
 Mazateco é Izcateco.
 2. Tzapoteco: Nexicho, Serrano del Valle, Miahuateco,
 Benixono ó Vijano, Tehuantepecano, Chatino, Solteco,
 Chinanteco, Papabuco ó Elotepeco.

On the authority of Belmar,¹ León includes Triki and Chocho in the Mixteco-Tzapotecana family. Respecting Chinantecan, he says: "La lengua Chinanteca de Oaxaca debe incluirse en la familia Mixteco-Tzapotecana, y no formala por sí, como pretende Brinton."² However, since León does not present proofs of his statement, we must still follow Brinton's classification.

BRINTON'S CLASSIFICATION

In *The American Race* (Philadelphia, 1901), Brinton classifies the stocks of Mexico, including those of Oaxaca. His classification follows:

- | | |
|--------------------|--------------------|
| 1. Uto Aztecan. | 3. Zoque. |
| Nahuatlan. | Chimalapas. |
| 2. Zapotec-Mixtec. | Mixes. |
| Amusgos. | Tapijulapanes. |
| Chatinos. | Zoques. |
| Chuchonas. | 4. Chinantec. |
| Cuicatecos. | 5. Tequistlatecan. |
| Mazatecos. | 6. Huave. |
| Mixtecos. | |
| Papabucos. | |
| Soltecos. | |
| Zapotecos. | |

¹ *Ensayo sobre la Lengua Triki, Oaxaca, 1897. El Chocho, Oaxaca, 1899.*

² Brinton, *Observations on the Chinantec Language of Mexico, 1892.*

In a later work Brinton classifies Mazatec with Chapanec; this would make a seventh stock.

BELMAR'S CLASSIFICATION

Belmar classifies the languages of Oaxaca in his *Familia Mixteco-Zapoteca y sus Relaciones con el Otomí—Familia Zoque-Mixe-Chontal-Huave y Mexicano* (Mexico, 1905). In chapter 13 he gives a list of words to prove the common origin of Zapoteca, Chatina, Papabuco, Chinanteco, Mixteca, Amusgo, Mazateca, Cuicateco, Chucho, Popoloco, Trique, and Otomí. These words show very little resemblance, and from the evidence presented it does not seem probable that they have a common origin. Indeed Belmar acknowledges that in many cases there is but slight resemblance, and he relies chiefly on remote morphological similarities to establish the relationships. His second family is Maya-Huave and his third is Chontal-Mexican.

THOMAS AND SWANTON'S CLASSIFICATION

The last work on the subject is *Indian Languages of Mexico and Central America*, by Thomas and Swanton.¹ Only nine pages are devoted to the languages of Oaxaca. They are there classified into the following families:

- | | |
|---------------|-----------------|
| 1. Zapotecan. | 2. Chinantecan. |
| 1. Mixteco. | 1. Chinanteco. |
| 2. Chocho. | 3. Zoquean. |
| 3. Amusgo. | 1. Mixe. |
| 4. Chatino. | 2. Zoque. |
| 5. Trike. | 4. Tequistlan. |
| 6. Mazateco. | 1. Chontal. |
| 7. Cuicateco. | 5. Huavean. |
| 8. Zapoteco. | 1. Huave. |

Although in this classification the authors include Zapotec and Mixtec as members of the same family, they devote two pages later in the book to proofs that they should be regarded as distinct.

¹ Bulletin 44. Bureau of American Ethnology, 1911.

Even though the material at their disposal was not sufficient to prove that the two languages mentioned belong to different families, a very good case is presented and the burden of proof lies with those who claim that they are one. In view of this it appears advisable to keep for the present the old Mixteco-Zapotec stock divided into two separate groups.

THE PRESENT CLASSIFICATION

Intensive studies of the morphology and vocabularies of all of the languages of Oaxaca are necessary before we can know definitely how many stocks there really are and the members of each. Owing to lack of knowledge of the morphology of all of these languages, with the exception of Zapotec, any attempt to classify them on a morphological basis is impossible.

When this study was commenced it was the author's intention to prepare a map showing the distribution of the languages, indicating, where possible, such dialectic differences as were shown by the vocabularies. It was found, however, that in most cases the vocabularies were not recorded with sufficient accuracy to enable the determination of these differences, having been made by individuals without previous experience in work of this kind. They of course used only the letters common to Mexican Spanish, consequently in the following pages, where vocabularies are quoted, it should be borne in mind that *ll* and *y* represent the same sound, namely, a voiced continuant practically equivalent to English *y*. *Gu* and *bu* usually represent *w*, though they may represent *gw* and *bw*. *B* and *v* both represent a bilabial voiced spirant. In every case it is doubtful what *x* represents, for it is employed in Mexico to indicate *jota* (a middle voiceless spirant), English *sh*, and English *x*, and even in some cases *s*. *Z* and *s* represent the same sound, a voiceless sibilant, as does also *c* before *e* and *i*. When this work was commenced the author was unable to obtain most of the works which treat of the languages of Oaxaca, and those that were procurable were written by men who had seen few vocabularies besides Zapotec and Mixtec. It therefore was deemed advisable to make comparisons of all the languages and to divide them into families

on the basis of the resemblances shown in Peñafiel's vocabularies. After this division had been made, all the available literature was examined, but it was not until the author had returned to the United States that it was possible to consult many of the books bearing on the subject. It is gratifying to be able to say that in almost every case the writer has been able to find authoritative support of his classification. But being unable to get the necessary books while in Mexico, access to the vocabularies could not be had when the literature was available. If it had been possible to consult both at the same time, the work would have been greatly facilitated. The following classification is entirely the result of a study of Dr Peñafiel's vocabularies. It does not claim by any means to present the final classification of languages; rather the principle has been followed to keep apart whatever cannot be proved definitely by accessible material to belong together.

- | | |
|-----------------------|----------------|
| I. ZAPOTEC. | IV. CHINANTEC. |
| 1. Zapotec. | 1. Chinanteco. |
| 2. Solteco. | V. CHONTAL. |
| 3. Chatino. | 1. Chontal. |
| II. MIXTEC. | VI. HUAVE. |
| 1. Mixteco. | 1. Huave. |
| 2. Cuicateco. | VII. ZOQUE. |
| 3. Amusgo (7). | 1. Zoque. |
| III. MAZATEC. | 2. Mixe. |
| 1. Chocho-Popoloco. | VIII. MEXICAN. |
| 2. Mazateco-Ixcateco. | |
| 3. Trique. | |

1. ZAPOTEC STOCK (*Familia Zapoteca*)

To the Zapotec stock belong Zapotec, Solteco, and Chatino. Pimentel, relying chiefly on morphological resemblances, such as the lack of plural in nouns in both languages, classes Zapotec and Mixtec in the same family. Orozco y Berra, Brinton, León, and Belmar follow his example. In regard to their lexical affinities Pimentel says: "Although Zapotec and Mixtec show close morphological resemblances, still the greater part of their vocabularies are different." He then gives a list of words which he considers alike,

but even these show little resemblance. Brinton considers them as belonging to the same stock. Neither León nor Orozco y Berra gives any proofs. In chapter 12 of his *Lenguas Indígenas de México* Belmar gives a list of words designed to prove the relations of the members of what he considers the Mixteco-Zapotecan stock. From this list he omits all the members of what is herein considered the Zapotecan stock. Müller objected to the classification of Zapotec and Mixtec in the same family, and Thomas and Swanton seem to prove that they belong to different stocks. Since the evidence presented by those who consider them as belonging to the same stock is clearly insufficient, it is best to consider them separate stocks.

To prove the relationship of Solteco, Chatino,¹ and Zapotec, the following brief vocabulary is presented:

	ZAPOTEC	SOLTECO	CHATINO
one	<i>tub</i>	<i>tico</i>	<i>cati</i>
two	<i>chopo</i>	<i>toco</i>	<i>tucua</i>
three	<i>chone</i>	<i>chona</i>	<i>xona</i>
four	<i>tap</i>	<i>taco</i>	<i>tacua</i>
five	<i>gayel</i>	<i>gayo</i>	<i>cayü</i>
six	<i>xopel</i>	<i>xoco</i>	<i>sucua</i>
seven	<i>galle</i>	<i>gache</i>	<i>cati</i>
eight	<i>sone</i>	<i>xoin</i>	<i>sunu</i>
nine	<i>gaa</i>	<i>guaa</i>	<i>ca</i>
ten	<i>chi</i>	<i>chii</i>	<i>tii</i>
eleven	<i>chivutubi</i>	<i>chetoco</i>	<i>tiichica</i>
twelve	<i>chivichopa</i>	<i>chima</i>	<i>titucua</i>
twenty	<i>galda</i>	<i>chidia</i>	<i>cala</i>
thirty	<i>galdavichi</i>	<i>chimallico</i>	<i>calati</i>
forty	<i>ckua</i>		<i>tukua</i>
fifty	<i>ckuavichi</i>		<i>tanailati, tohuati</i>
seventy	<i>gayiona viche</i>		<i>xonailatu, chuna yalati</i>
eighty	<i>taa</i>		<i>acuaillae, gaynyala</i>
ninety	<i>taa viche</i>		<i>acnailati</i>
I	<i>na</i>	<i>naa</i>	<i>naa</i>
thou	<i>zui</i>	<i>noo</i>	<i>nooc</i>
me	<i>saello</i>	<i>lecui</i>	<i>yucua</i>
we	<i>sarena</i>	<i>namo</i>	<i>naas</i>

¹ See also the notes on Chatino, by Dr Franz Boas, to appear in the next number of this journal.

you	<i>guesana</i>		<i>siignova</i>
they	<i>seban</i>	<i>lecui</i>	<i>uncua</i>
that one	<i>noudee</i>		<i>yundee</i>
to eat	<i>gabo</i>	<i>gacuiyati</i>	<i>gaen</i>
to drink	<i>gobo</i>	<i>gay</i>	<i>cooc</i>
to run	<i>guesomdo</i>	<i>cuicamer</i>	<i>satucua</i>
to dance	<i>guellena</i>	<i>uyacam</i>	<i>guloquillaae</i>
to sing	<i>golna</i>	<i>golroy</i>	<i>gutaloana</i>
rain	<i>xsoleguche</i>	<i>sague</i>	<i>choo</i>
fire	<i>gu</i>	<i>guiti</i>	<i>luti</i>
water	<i>nira</i>	<i>lira</i>	<i>yla</i>
land	<i>guig</i>	<i>yoo</i>	<i>yun</i>
sea	<i>nisdoo</i>	<i>rosra</i>	<i>lajoo</i>
river	<i>gueuc</i>	<i>yeco</i>	<i>luidela</i>
lake	<i>chaico</i>	<i>dioo</i>	
plain	<i>tuviyan</i>	<i>nache</i>	<i>naete</i>
mountain		<i>yayaca</i>	<i>luieaa</i>
island	<i>guchi</i>	<i>yeco</i>	

I. ZAPOTEC

Zapotec is spoken in a large area in the central and southeastern portion of Oaxaca; in fact in almost one-half of the state. There are undoubtedly many dialects, but, as has been already stated, it was not possible to determine them from the material at hand. Orozco y Berra mentions the following: Zapoteco Principal, Zapoteco Nexitza, Zapoteco Serrano de Ixtepeji, Zapoteco Serrano de Cajones, Zapoteco Serrano de Miahuatlan, Zapoteco Tehuantepecano.

Dr Frederick Starr¹ has this to say about the distribution of Zapotecó:

The Zapotecs held an extensive area to the east and west of the old Mixtec territory. They were a powerful tribe and were frequently at war not only with the Mixtecs but also with the Aztecs. At the time of the Conquest they had been suffering more or less degradation at the hands of these powerful foes. Their territory extended from Oaxaca to Tehuantepec and Xoconochco. García y Cubas gave the total Zapotec population in 1876 as 239,600. It must now be considerably greater.

His statement "to the east and west of the old Mixtec territory" is rather ambiguous, especially since he says that "the Mixtec

¹ *Notes upon the Ethnography of Southern Mexico*, p. 145.

territory extends eastward from the Pacific coast into the high mountainous country of the interior." His statement that "their territory extended from Oaxaca to Tehuantepec and Xoconochco," however, agrees very well with the area on our map, except that we found scattered Zapotec villages all the way to the border of Guerrero. The area which Orozco y Berra demarcated on his map agrees very well with our area.

Belmar dealt with the distribution thus:

Los zapoteca habitan en el Estado de Oaxaca. Su principal asiento fueron y son actualmente los fértiles valles, que partiendo de la ciudad de antequera se extienden por algunas millas al norte, al sur y al oriente. Las poblaciones de Mitla, Tlacolula, Teotitlán, Tlacoachahuaya y Zaachila son centros principales en donde floreció este raza, cuya lengua se consideró como la más culta de los pueblos que la forman. Ocupa también el Istmo de Tehuantepec, distinguiéndose hoy día del resto de las demás razas por sus costumbres especiales y por sus tendencias progresistas. Su idioma, conocido con el nombre de Tehuano, Tehuantepecano, zapoteco de Tehuantepec, ó zapoteco de tierra caliente, es solo un dialecto, en la actualidad en decadencia. En la región montañosa del Norte, confinando con los chinanteca, mazateca y ayook (mixes) se extienden los zapoteca, cuya lengua comprende el zapoteca *nexitza*, ó zapoteco de los pueblos *Rincon*, el zapoteco de los pueblos de Cajones, conocido con el nombre de *Vijano*, y el zapoteco serrano de los pueblos que forman la Sierra Juárez del Distrito de Ixtlán, y hablado con mas pureza en Guelatao, Ixtlán, Ixtepeji, Nexicho, Teococuilco, Analco y Capulalpan. En el serranía del Sur se extiende aun este raza hablando el dialecto *Miahuateco*. Al Sur existe el pueblo de Sola, cuyo nombre dió origen á la denominación de *Solteco*. En la región Suroeste viven los pueblos de Elotepec y otros de lengua zapoteca, conocida con el nombre de Elotepeco ó Papabuco.

We have vocabularies from the following places:

Distrito del Centro:

San Bartolo Coyotepec.

Distrito de Choapin:

Yahuive and Jaltepec.

Distrito de Ejutla:

Santa María Chichihualtepec.

Coatecos Altas.

San Vincente Coatlán.

San Martín Lachila.

Santa Cruz Nixila (?)

San Andreas Sebache.

Distrito de Jamiltepec:

San Antonio Ocatlán.

Distrito de Juchitán:

Juchitán.

Espinal.

Unión Hidalgo.

Distrito de Miahuatlán:

San Mateo Río Hondo.

San Juan Mixtepec.

San Agustín Mixtepec.

San Luis Amatlán.

San Pablo Coatlán.	San Dionisio Ocotepec.
Santa María Coatlán.	San Pedro Quiatoni.
San Andreas Paxtlán.	Teotitlán del Valle.
Santiago Papagüis.	San Juan Guelavla.
Santiago Xanica.	San Lucas Quiavini.
Santa María Ozoltepec.	Santiago Matatlan.
San Juan Ozoltepec.	Santa María Albarradas.
San Tomás Tamazulapan.	Distrito de Tlaxiaco:
Santa Caterina Cuixla.	San Pedro El Alto.
Santa Cruz Ozoltepec.	Yolotepec de la Paz
Distrito de Ocatlan:	Chalcatongo.
Ocatlan de Morelos.	San Juan.
Santiago Apostol.	Distrito de Villa Alta:
Santa Ana Zegache.	Beltaza.
Ocatlan Magdalena.	Tenetze.
San Baltasar Chicicapan.	Talea.
San Pedro Apostol.	Lachiroag.
Santa Lucía Ocatlan.	Tabaa.
San Miguel Tilquiapan.	Yazona.
Santa Tomás Jalieza.	San Francisco Cajonos.
San Martín Tilcajete.	Zoochila.
Distrito de Pochutla:	Xagalaxi.
Piñas San Mateo.	Lachixila Vijanos.
San Juan Loxicha.	Distrito de Zimatlán:
Distrito de Tehuantepec:	Zimatlán.
Tehuantepec.	Santa María Zachila.
Tlacotepec.	Huixtepec.
Jalapa del Estado.	Santa Cruz Mixtepec.
Distrito de Tlacolula:	Ayoquezco.
Tlacolula de Matamoros.	Distrito de Yautepec:
Villa de Mitla.	San Bartolo Yautepec.
San Pablo Mitla.	Santa María Asunción Quiegolani.
Tlacochoaya.	Quichapa.
San Juan Teitipec.	

2. SOLTECO

Solteco is represented by one vocabulary from San Miguel Sola in the district of Zimatlán. Concerning this language Orozco y Berra says:

También entre los chatinos, y particular del pueblo de Sola. No conocemos su filiación etnográfica, y nos figuramos que pertenecerá, así como el papabuco, á tribus antiguas que se están extinguiendo.

Pimentel has nothing further to offer, but speaking of Mazateco and Solteco he says:

Las noticias que sobre ellas he recibido me hacen creer que pertenecen á la familia Mixteco-Zapoteco.

Thomas and Swanton make no mention of the language.

3. CHATINO

Of the third language of the Zapotecan stock, Chatino, Peñafiel has vocabularies from the following places of the District of Juquila:

San Juan Quiahije,
Santa María Tlapanalquiahuitl,
Santa Cruz Tepenixtlahuaca,
San Juan Lachao,
Zensontepec.

Orozco y Berra says:

En los Departamentos del Centro y de Jamiltepec, entre el zapoteco y el mixteco. No hemos encontrado datos para clasificarla.

In the list of places where it is spoken he gives San Miguel Sola, the only place from which we have a Soltecan vocabulary.

Pimentel says:

Respecto al Chatino y al Papabuco tengo un buen dato para considerarlos afines del Mixteco, y es la noticia que sobre esto me ha dado una persona ilustrada y de buen criterio que visitó el Estado de Oaxaca, haciendo observaciones sobre los idiomas y las costumbres de sus habitantes.

II. MIXTECO STOCK (*Familia Mixteca*)

The two languages Mixteco and Cuicateco undoubtedly belong to this stock. The former occupies a large area in the western part of Oaxaca and the adjoining neighborhood in Guerrero.

1. MIXTECO

Dr Peñafiel's vocabularies come from the following places:

District of Huajapan:	Santiago Chazumba.
Huajotitlan.	San Martin Zacatepec.
Miltepec Santiago.	Tequistepec.

District of Jamiltepec:	Magdalena Jaltepec.
Jamiltepec.	Apoalo Santiago.
District of Juquila:	Tezacoalco San Pedro.
Tutupec.	San Pedro Cantaros.
District of Juxtlahuaca:	Tecomatlan San Miguel.
Juxtlahuaca.	District of Silacayoapan:
San Juan Mixtepec.	Calihuacia.
Tecomaxtlahuaca.	San Pedro.
San Juan Lagunas.	San Miguel Ahuehuetitlan.
Santiago Coycoyan.	Tlapacingo San Francisco.
Santa Caterina Noltepec.	District of Teotitlan:
District of Nochixtlan:	San Juan Coatzopan.
Nochixtlan.	District of Teposcolula:
Yanhuitlan.	San Vincent Nuñu.
Santo Domingo.	San Pedro Martin Yocunana.
Yodocono Magdalena.	Tlatayapan.
Tilantongo Santiago.	Santa Maria Tiltetepec.

The Mixteco language does not cover a continuous area; the people speaking it are scattered among the villages of the Mazatecan, Zapotecan, and Chinantecan stocks. The area represented by our vocabularies is practically the same as that given by Orozco y Berra—in fact virtually all the towns are given in his list. In describing the area occupied by the Mixtecs, Dr Starr observes:

The country occupied by the Mixtecs extends eastward from the Pacific Coast into the high mountain country of the interior. Their territory lies within the States of Guerrero, Puebla, and Oaxaca, but chiefly in the last. It is commonly divided into two districts—the *Mixteca Alta*, or high Mixteca, and the *Mixteca Baja*, or low Mixteca. In 1876 Garcia y Cubas set the number of Mixtecs at 220,000. The present population must be considerably greater.

Belmar marks an area on his map which corresponds roughly to the one given by Starr. It is only approximately correct, for Peñafiel has vocabularies from the places which Belmar has marked Chatino, Chocho, and Mazateco. The description which he gives of their area in *Lenguas Indígenas de México* is a good one. It is as follows:

Al lado de los zapoteca y en la región occidental del Estado de Oaxaca se encuentran los mixteca, que se extienden desde el Estado de Puebla hasta el de Guerrero. . . . En el Estado de Oaxaca, su centro principal, se introdujo esta tribu, en los tiempos pasados, en el valle, bajando de las altas montañas de su

recidencia primitiva para estar casi envuelta por los zapoteca y establecer los pueblos de Xoxo, Cuilapan, Ixtlahuaca y Tepenixtlahuaca. En los distritos de Zimatlán, Juquila y Jamiltepec confina con los zapoteca y chatinos, y en los distritos que forman propiamente la mixteca confinan con los *tríques*, chochos, popolocos de Puebla, amuzgos, cuicateca, chinanteca, mazateca y mexicana.

2. CUICATECO

Cuicateco, the other member of this family, is spoken in the District of Cuicatlan. Dr Peñafiel's vocabularies come from

Cuicatlan.

San Francisco Chapulapa.

Concepción Pápulo.

Orozco y Berra gives all of these villages. Belmar gives the following list of pueblos where the language is spoken:

Distrito de Cuicatlan:

Quiotepec.	Teponaxtla.
Coyula.	Tlacolula.
Jonaltepec.	Tepeusila.
Cotahuista.	Tutepetongo.
Nacatepec.	Teutila.
Pápulo San Lorenzo.	Santa Cruz Chiquiltitlán.
Pápulo Santa María.	Teotilalpam.
Pápulo Reyes.	Santo Domingo del Río.
Pápulo San Andrés.	Chapulapa.
Cuyaltepec.	Tlalistac.

Distrito de Nochixtlan:

Sotula.	Comotlán Santiago.
San Bartolo.	Yololtepec Santa María.
Tlalixtlahuaca San Juan.	Ixtlahuaca Santiago.
Tlaxila Santa Caterina.	Montebolós San Agustín.

Concerning Cuicatlan, from which Peñafiel secured a vocabulary in 1886, Belmar says:

Cuicatlán, cabecera del Distrito de su nombre, perteneció á esta tribu: en la actualidad sólo se habla el idioma castellano.

From this we may infer that Cuicateco passed out of use in Cuicatlan between 1886 and 1902.

All the authors put it in the Mixteco-Zapoteco family, but its exact position has been a matter of doubt. Belmar, however, placed it correctly in 1902. He says:

Examinandos tanto la estructura de la lengua como su diccionario, se descubre su inmediata relación con el mixteco, como lo demostraré al tratar de este último idioma.

The relationship between Cuicateco and Mixteco can be seen from a consideration of the following brief list of words:

	MIXTECO	CUICATECO
uno	yí	ama
dos	yvi	obe
tres	umi	igno
cuatro	cumi	cun
cinco	uu	tun
seis	yno	joo
siete	axa	ducha
ocho	ana	nine
nueve	j	nua
diez	uxi	dichi
once	uxii	dichi ama
doce		dichi ubi
veinte	oro	duco
yo	yu	u
tu	yoo	di du
el	mera	gicoo enaga
nosotros	meoyo	nua
vosotros	taingana	nonon
ellos	mecha	mosaa
este	tayo	chuu
viento	tachicano	yinie
trueno	dayidavi	imidavi
relámpago	xincluta	cuge
nieve	yihua	llaun
fuego	ñuu	llañu
agua	luin	nune
hielo	yihua	hivo
tierra	ñuu	taha
mar	lanaa	mimllauu
rio	yuta	gueo
valle	yodocono	yudu chaell
llano	llodoc	ludu
cerro	yucu	gicuguan
piedra	yuu	yuhu
lluvia	cuachidavi	cubi

3. AMUSGO

Dr Peñafiel has only one Amusgo vocabulary, which is difficult to read and seems to have been carelessly recorded. It has not been possible to determine its affiliation from this vocabulary, although some of the words show similarity to Mixtec. For the sake of convenience, I have marked it on my map as belonging to the Mixtec language. It is usually classed as a member of the Mixtec-Zapotec family. Orozco y Berra calls it a sister language of Mixtec. His words are:

Lengua hermana del mixteco. Con el nombre de *amucheco* la encontramos nombrada en los manuscritos del Sr. García, y con el de *amusgo* en la relación de los curatos de Oaxaca: ambas palabras son sinónimas.

Pimentel is plainly in error when he says:

Los informes adquiridos por, el Sr. Orozco y Berra (*Geografía de las Lenguas de México*) que juzgo de buen origen le hicieron colocar, como yo también lo hago, al Cuicateo con el mixteco, y al Amusgo con el Zapoteco.

The most complete study of Amusgo was made by Sr Belmar, who, in 1901, published his *Investigación sobre el Idioma Amusgo*. In this work he says concerning its affiliation:

El Amusgo es una de las lenguas aglutinantes más fáciles de estudiar y pertenece á las lenguas que forman la familia mixteco-zapoteca. Es digno de observar, sin embargo, que en el fondo se acerca más á la lengua zapoteca, y en su parte léxica al mixteco. Así el Amusgo reconoce cuatro conjugaciones, esto es, cuatro grupos de verbos determinados en el pasado por los prefijos *ta*, *te*, *ti*, *to* ó *tu*, y el zapoteco reconoce igualmente los prefijos *ta*, *te*, *ti*, *to*, *to* ó *ta*, *re*, *ri*, *ro*, para el presente de indicativo.

Por lo demás la gramática del Amusgo y su diccionario se corresponden manifestando su afinidad sin esfuerzo alguno con el mixteco, por lo que omito hacer en el presente estudio comparaciones que me reservo al publicar el examen de la lengua mixteca.

Whether Sr Belmar has published the above-mentioned work on Mixtec the writer is unable to say, though it is supposed that he has not, for no such work has been found in either Mexico or the United States. Indeed it was not possible to obtain any of Belmar's grammars in Mexico.

Dr Peñafiel's vocabularies of Amusgo are from the pueblo of San Pedro Amuzgos in the District of Jamiltepec. Sr Belmar's

description of the distribution of the Amusgo villages is undoubtedly correct. It is as follows:

Los pueblos que en el Estado de Oaxaca forman la nación ó raza Amuzga se reducen á los de San Pedro Amuzgos, San Francisco Sayultepec [*sic*], Cacahuastepec y Santa María Ipalapa, pertenecientes al Distrito de Jamiltepec. Los demás pueblos se hallan en el Estado de Guerrero.

Orozco y Berra makes no mention of Amusgo in the state of Oaxaca. It is interesting to note that Belmar states that it has a pitch accent of etymological significance, thus adding one more language to the list of American languages with pitch accents, a characteristic which a few years ago was not supposed to exist in North America. The languages in Mexico using it are, Chatino, Chinanteco, Otomí, and Amusgo. The entire vocabulary from San Pedro Amuzgos follows:

Vocabulary from San Pedro Amuzgos

Dios	<i>Tiocpsun</i>	Mi hermano mayor	<i>Siosaatiguche</i>
Sacerdote	<i>Tec</i>	Mi hermano menor	<i>Tajaalluchoa</i>
Templo	<i>Huashua</i>	Mi hermana mayor	<i>Saasatigue</i>
Hombre	<i>Sansaha</i>	Mi hermana menor	<i>Tu jo</i>
Mujer	<i>Zancutin</i>	Indio	<i>Sanguie</i>
Muchacho	<i>Yuchoo</i>	Gente	<i>Zaha</i>
Muchacha	<i>Yuscuchoo</i>	Cabeza	<i>Sichyinen</i>
Niño ó niña	<i>Yusaadaa</i>	Pelo	<i>Sochquen</i>
Mi padre, dice el hijo	<i>Tu</i>	Cara	<i>Noho</i>
Mi padre, dice la hija	<i>Dahaa</i>	Frente	<i>Sokosta</i>
Mi madre, dice el hijo	<i>Naa Doho</i>	Oreja	<i>Songuihe</i>
Mi madre, dice la hija	<i>Naa Doho</i>	Ojo	<i>Tauno</i>
Mi marido	<i>Zahaa</i>	Boca	<i>Doo</i>
Mi esposa	<i>Zascuaa</i>	Lengua	<i>Saha</i>
Mi hijo, dice el padre	<i>Daa Yoscuaa</i>	Dientes	<i>Sinuhoo</i>
Mi hijo, dice la madre	<i>Daa Yoscuaa</i>	Barba	<i>Sochisnaa</i>
Mi hija dice el padre	<i>Da Yscu</i>	Cuello	<i>Sostoo</i>
Mi hija dice la madre	<i>Ni Iluja jaackifoo</i>	Brazo	<i>Nacajunscuaa</i>
		Mano	<i>Nayindoo</i>
		Dedo pulgar	<i>Yuetihiiinat</i>
		Uñas	<i>Soneti</i>
		Cuerpo	<i>Situhu</i>
		Pecho	<i>Sindaa</i>
		Barriga	<i>Sihaa</i>
		Pechos de mujer	<i>Sicuhui</i>
		Pierna	<i>Tecuhi</i>

Pié	<i>Chiaguuhi</i>	Llano	<i>Luctulla</i>
Dedos del pié	<i>Daaguie</i>	Cerro, montana	<i>Tuua Lindaa</i>
Hueso	<i>Singule</i>	Isla	<i>Hunchantuduaa</i>
Corazon	<i>Sohoa</i>	Piedra, roca	<i>Sojoh</i>
Sangre	<i>Niunt</i>	Sal	<i>Sachajat</i>
Pueblo, villa, aldea	<i>Chu ju</i>	Cobre	<i>Cofohugue</i>
Jefe	<i>Sumachia</i>	Plata	<i>Sup</i>
Guerrero	<i>Saucuajn</i>	Oro	<i>Sunja</i>
Cuna	<i>Dudoschoo</i>	Bosque, selva	<i>Tomah Tomat</i>
Casa	<i>Huachioo</i>	Arbol	<i>Huichutomat</i>
Choza, casa de		Madera	<i>Suchundiasun</i>
paja	<i>Huangio</i>	Hoja	<i>Sucoo</i>
Sepulcro	<i>Sinduit</i>	Corteza	<i>Suchuma</i>
Caldera	<i>Tuncutiusui</i>	Yerba	<i>Sondaa</i>
Arco	<i>Satep</i>	Maíz	<i>Naá</i>
Canoa	<i>Sondoo</i>	Frijol	<i>Dahe</i>
Guarache cacle ó		Calabaza	<i>Siquen</i>
zapato	<i>Ducuu</i>	Chile, pimienta	<i>Sichaa</i>
Pipa	<i>Yusha Linnutaa</i>	Carne	<i>Sipsondu</i>
Tabaco	<i>Susconu</i>	Murcielago	<i>Luechojun</i>
Cielo	<i>Lucunudue</i>	Perro	<i>Luechee</i>
Sol	<i>Yocunpat</i>	Coyote	<i>Luechendu</i>
Luna	<i>Chip</i>	Tigre	<i>Luichiayaa</i>
Estrella	<i>Nohuu</i>	Oso	<i>Luichansaa</i>
Día	<i>Naschuhee</i>	León, puma	<i>Luichiatty</i>
Noche	<i>Nachunju</i>	Zorra	<i>Tiundu</i>
Mañana	<i>Nityn</i>	Tejón	<i>Lueschaa</i>
Tarde	<i>Matuma</i>	Ciervo	<i>Sonducho</i>
Primavera	<i>Daacochi</i>	Jabalí	<i>Luechucundea</i>
Verano	<i>Ditoycundui</i>	Armadillo	<i>Luechio</i>
Invierno	<i>Ditaenpuchujin</i>	Raton	<i>Tcochit</i>
Viento	<i>Simanchuhe</i>	Conejo	<i>Tiusu</i>
Trueno	<i>Sihy</i>	Ardilla	<i>Tuipsu</i>
Relámpago	<i>Dicodunduit</i>	Tortuga	<i>Lubi</i>
Lluvia	<i>Cobataa</i>	Lagartija	<i>Cuchucuan</i>
Nieve	<i>Nitokuasaa</i>	Caballo	<i>Luesho</i>
Fuego	<i>Maachun</i>	Mosca	<i>Sunp</i>
Agua	<i>Daatio</i>	Mosquito	<i>Luetaa</i>
Hielo	<i>Chucunytuen</i>	Sapo	<i>Luccu</i>
Tierra	<i>Sohot</i>	Culebra, serpiente	<i>Luechuchoa</i>
Mar	<i>Daadoe</i>	Culebra de cascabel	<i>Luehundoo</i>
Rio	<i>Sujop</i>	Alacran	<i>Luechojoo</i>
Lago	<i>Sujoy</i>	Ave	<i>Luesaa</i>
Valle	<i>Nochujun</i>		

Huevo	<i>Tigueschuen</i>	Hoy	<i>Seguam</i>
Plumas	<i>Sec</i>	Ayer	<i>Huaja</i>
Alas	<i>Senguiko</i>	Mañana (el día de)	<i>Yu</i>
Ganso	<i>Huiconcho</i>	Sí	<i>Llaa</i>
Pato	<i>Luetan</i>	No	<i>Tida</i>
Zopilote	<i>Esten</i>	Uno	<i>Vncui</i>
Cuervo	<i>Suincondie</i>	Dos	<i>Huquee</i>
Guajalote	<i>Cholo</i>	Tres	<i>Dée</i>
Paloma	<i>Luetup</i>	Cuatro	<i>Nunquee</i>
Pez	<i>Lueltusaa</i>	Cinco	<i>Vun</i>
Bobo, pescado	<i>Luetsco</i>	Seis	<i>Ynu</i>
Anguila	<i>Luichi</i>	Siete	<i>Diquee</i>
Nombre	<i>Sutyucho</i>	Ocho	<i>V-n-m</i>
Blanco	<i>Naquichi</i>	Nueve	<i>Ni-jin</i>
Negro	<i>Luento</i>	Diez	<i>Ynqui</i>
Colorado	<i>Nat hiique</i>	Once	<i>Ynquichucuy</i>
Azul celeste	<i>Nat sumaa</i>	Doce	<i>Ynquichohnie</i>
Amarillo	<i>Najan</i>	Veinte	<i>Diquihiti</i>
Verde	<i>Nathuy</i>	Treinta	<i>Dinguinchugui</i>
Grande	<i>Top maa</i>	Cuarenta	<i>Huenaa</i>
Fuerte	<i>Nihuitna</i>	Cincuenta	<i>Huenaachungui</i>
Viejo	<i>Ditijio</i>	Sesenta	<i>Denaachungui</i>
Joven	<i>Yuchonit</i>	Setenta	<i>Denaachungui</i>
Bueno	<i>Lalarot</i>	Ochenta	<i>Niquenaa</i>
Malo	<i>Huinat</i>	Noventa	<i>Ninguenaachoqui</i>
Muerto	<i>Sahoo</i>	Ciento	<i>Unnaa</i>
Vivo	<i>Banut</i>	Comer	<i>Tachincuaa</i>
Frio	<i>Teln</i>	Beber	<i>Chincuaa</i>
Caliente	<i>Minat</i>	Correr	<i>Luenanut</i>
Yo	<i>Taa</i>	Ballar	<i>Luechynut</i>
Tú	<i>Nuhu</i>	Cantar	<i>Cataa</i>
Él	<i>Chahnaa</i>	Dormir	<i>Luchuu</i>
Nosotros	<i>Masofa</i>	Hablar	<i>Cuanp</i>
Vosotros	<i>Taa</i>	Ver	<i>Coguindidu</i>
Ellos	<i>Chaguaa</i>	Amar	<i>Tanduee</i>
Este	<i>Naquam</i>	Matar	<i>Luichicuee</i>
Aquel	<i>Cuichinagnaa</i>	Sentarse	<i>Cupmaa</i>
Todo, todos	<i>Huachautjop</i>	Estar en pie, par-	
Mucho, muchos	<i>Dindee</i>	arse	<i>Cundiju</i>
Quien	<i>Ninatín</i>	Ir	<i>Cajau</i>
Léjos	<i>Lina</i>	Venir	<i>Dendiut</i>
Cerca de	<i>Dion</i>	Andar	<i>Cocaa</i>
Aquí	<i>Dojo</i>	Trabajar	<i>Luisaapchinaa</i>
Allá	<i>Dom</i>	Robar	<i>Sanchuee</i>

Mentir	<i>Sacantu</i>	Gotjear	<i>Otaaquiza</i>
Dar	<i>Linaap</i>	Voluntad	<i>Nanucochun</i>
Reir	<i>Lujup</i>	Memoria	<i>Nadaasquen</i>
Gritar	<i>Luitsuua</i>	Pensamiento	<i>Machitiyuh</i>
Bramar	<i>Tisuhao</i>	Bondad	<i>Sanhuayasaha</i>
Ladnar	<i>Cuchucui</i>	Amor	<i>Tadiduchu</i>
Cacarear	<i>Cutisuagutujun</i>	Olvido	<i>Docochuchut</i>
Tronar	<i>Conaha</i>	Verdad	<i>Amayut</i>
Gotear	<i>Lutucnudea</i>	Razon	<i>Nuhiimamama</i>
Charlar	<i>Diquinisaham</i>	Pereza	<i>Dinini</i>
Lloviznar	<i>Dachuscah</i>		

III. MAZATEC STOCK (*Familia Mazateca*)

We do not affiliate the five languages of this stock (Chocho, Popoloco, Trique, Mazateco, and Ixcateco) with others and will call them Mazatecan. Our reasons are: All five are closely related, as may be seen by the list given at the end of this section. It has been variously claimed that one or all of these languages are related to Mixtec, but this has never been proved. We can find no such relationships from a study of our vocabularies.

1. CHOCHO

Orozco y Berra says of Chocho:

Lengua hermana de la mixteca. En Oaxaca lleva el nombre de *chocho*: en Puebla el de *popoloco*; en Guerrero el de *tlapaneco*; en Michoacan *teco*; en Guatemala *pupuluca*: es el antiguo *yope*. La nación que usaba de esta habla parece ser una de las mas antiguas del país.

His list of pueblos does not quite agree with ours. We have vocabularies from Coixtlahuaca, Jicotlan, San Jeronimo Ota, and Tlapeltepec, all in the district of Coixtlahuaca. In the district of Teposcolulu, from Santa María Tamazulapan and San Antonio, neither of which is given by Orozco y Berra. His area, however, is practically the same as the one given on our map. That given by Belmar corresponds in general with ours. He describes it as follows:

Los Chochos, llamados tambien popolocos, habitan los Distritos de Coixtlahuaca y Teposcolula, y limitan con los mixteca y los popoloca y chuchones del Estado de Puebla.

Speaking of Chocho and Popoloco, Pimentel says:

También el Popoloco de Puebla es un dialecto distinto del Chochon, aunque muy parecido, según puedo juzgarse por la siguiente comparación de los adjetivos numerales que he podido recojer en los dos dialectos.

	CHUCHON	POPOLOCO
uno	ngu	gon
dos	yuu-rina	yuu
tres	ni-rina	nii
cuatro	nuu-rina	noo
cinco	nau-rina	nag-hou
seis	njan-rina	tja
siete	yaatu-rina	yaala
ocho	nh-rina	gnii
nueve	naa-rina	na
diez	te-rina	tie

La terminación *rina*, en Chuchon, parece ser un signo de adjetivo numeral.

This dialectic difference exists not only in Puebla but in the Popoloco villages of Oaxaca, where there seems to be a difference from the adjacent Chocho villages. It comes out quite clearly in Dr Peñafiel's vocabularies, some of which bear the name Popoloco, while others are termed Chocho. This list shows the relationship thus brought out.

	CHOCHO	POPOLOCO
uno	gu	ngu
dos	yu	nie
tres	nie	nnuu
cuatro	nno	lluun
cinco	yun	llun
seis	itan	llááá
siete	yadan	llin
ocho	yusiz	nná
nueve	naa	te
diez	tee	taon
lluvia	ichin	chai
agua	inda	inda
hielo	cinda	yaa
tierra	inche	nunde
mar	indaxaum	ndullon
rio	imda	inda
pecho	naquin	ndaquin
hueso	inda	inda

Belmar does not seem to find this distinction, but calls those found in Pueblo, Popolocos. León considers them the same, while

Starr is rather inclined to think that Popoloco is the name of the language, Chochos the name of the people. The names given in Peñafiel's vocabularies may accidentally happen to coincide with only a minor dialectic difference.

These two languages are usually classed as members of the Mixtec-Zapotec family, with closer affiliation with Mixtec than with Zapotec. Pimentel says:

Lo que si puedo asentar, sin temor de equivocarme, y mas interesante á mi objeto, es que el Popoloco y el Chuchon pertenecen á la familia Mixteco-Zapoteco: tal es la opinion de todos los conocedores de esos idiomas, y esa opinion la encuentro confirmada por las comparaciones que he podido hacer, y de que presento las siguientes muestras.

His comparison, which follows, is not confined to any two languages, but any two of the four—Popoloco, Chocho, Mixteco, and Zapoteco. Since we do not consider Zapotecan as belonging to the same family, we will leave it out of consideration.

Pimentel does not state from what sources he draws his Chocho or Popoloco vocabularies; however, they show great diversity from those we have examined, which latter, however, are quite uniform for vocabularies of this class.

The following is Pimentel's list of Chocho-Mixteco comparisons:

P = Popoloco; *M* = Mixteco; *C* = Chocho

Padre	<i>P. Dutua</i>	<i>M. Dzutu</i>
	<i>C. Tóa</i>	<i>M. Tóa</i>
Hermano	<i>P. Tzi-kichie</i>	<i>M. Kuhua</i>
Mano	<i>P. Duteni</i>	<i>M. Nani</i>
Cielo	<i>C. Nganhutna</i>	<i>M. Andehui</i>
Día	<i>C. Methi</i>	<i>M. Dehui</i>
Luna	<i>P. Yaa</i>	<i>M. Yoo</i>
Mundo	<i>P. Ye</i>	<i>M. Yekui</i>
Maíz	<i>P. Nana</i>	<i>M. Nuni</i>
Piedra	<i>P. Choo</i>	<i>M. Chuu</i>
Azul	<i>P. Yuhua</i>	<i>M. Sandayuhua</i>
Dos	<i>P. Yuu</i>	<i>M. Uhui</i>
Tres	<i>P. Nii</i>	<i>M. Uni</i>
Cinco	<i>P. Naghon</i>	<i>M. Hoho</i>
Ocho	<i>P. Gnii</i>	<i>M. Una</i>
Yo	<i>P. Snia</i>	<i>M. Ndi</i>
Tu	<i>P. Daka</i>	<i>M. Doho</i>

Nosotros	C. <i>Nau</i>	M. <i>Ndoo</i>
Comer	P. <i>Asindie</i>	M. <i>Yozasindi</i>
Ver	C. <i>Tiyku</i>	M. <i>Yotiso</i>
Oler	C. <i>Chituni</i>	M. <i>Yotnani</i>
Si	C. <i>Haau</i>	M. <i>Dzahua</i>

It may be inferred from the method which he employs of comparing now with Zapotec, now with Mixtec, that his list has been selected to bring out striking resemblances or unmistakable evidences of relationship, but apparently they do not exist. Of a list of twenty-three words there are only eight which can be considered as showing any relationship, namely:

Padre	P. <i>Dutua</i>	M. <i>Dzutu</i>
	C. <i>Tda</i>	M. <i>Tda</i>
luna	P. <i>Yaa</i>	M. <i>Yee</i>
mundo	P. <i>Ye</i>	M. <i>Ye-kui</i>
piedra	P. <i>Choo</i>	M. <i>Chuu</i>
azul	P. <i>Yuhua</i>	M. <i>Sanda-yuhua</i>
tu	P. <i>Daha</i>	M. <i>Doho</i>
comer	P. <i>Asindie</i>	M. <i>Yoz-asindi</i>

For the time being, it seems safer to await further evidence before combining these languages in one group, although their relationship is not unlikely.

2. MAZATECO

Mazateco is spoken at the north of Cuicateco on the Vera Cruz border. All agree on this locality. Our vocabularies come from the following places:

District of Teotitlan:	District of Tuxtepec:
San Lorenzo Cuaunelcuilitla.	Jalapa de Diaz.
Huautla de Jiminez.	San Miguel Soyaltepec.
Huchuetlan San Francisco.	San Pedro Ixcatlan.

Orozco y Berra says:

En el departamento de Teotitlan, formando una pequeña fracción en el límite con el Estado de Vera Cruz. El mazateco está todavía por clasificar.

Dr Starr says that the Mazatecs are found in the Districts of Cuicatlan and Teotitlan. He is evidently wrong in omitting Tuxtepec, for some of Dr Peñafiel's vocabularies come from that district. It is known that several of the villages in the District of

Tuxtepec are Mazatec, for the writer obtained vocabularies from Mazatec Indians who came to Tuxtepec to trade. It is quite probable, however, that a few Mazatecas are found in the District of Cuicatlan. Belmar gives Teotitlan and Tuxtepec, as we do. He divides the Mazatecan language into two dialects—Mazateco and Izcateco. The difference is quite strong between Izcateco and Mazateco in Dr Peñafiel's vocabularies, as is shown in the comparison at the end of this stock. Dr Peñafiel's Izcateco vocabularies are two in number, one from Izcatlan Santa María in the District of Teotitlan, and the other from Izcatlan in the District of Tuxtepec.

Mazateco has been classed by most authors as a member of the Zapotec-Mixteco stock. Orozco y Berra was not able to classify it, but Pimentel, speaking of Solteco and Mazateco, says:

Estas dos lenguas se hablan en Oaxaca. Las noticias que sobre ellas he recibido me hacen creer que pertenecen á la familia mixteco-zapotecó, opinion que encuentro confirmando respecto al mazateco, examinando el PATER que inserto adelante en dos dialectos, pues encuentro algunas voces análogas á las correspondientes de los idiomas mixteco-zapotecos ya he estudiados.

He gives no proofs, however.

In *The American Race* Brinton places not only Mazateco but all the other members of this stock in the Zapotec-Mixtec linguistic stock; but in a paper read before the American Philosophical Society¹ he classes it differently. No one, except Lehmann, who has since written on the stocks of Oaxaca, has paid the slightest attention to this paper. In his paper Brinton points out the relationship with Chapanec of Chiapas and denies the affinities with the Zapotec-Mixtec stock, which he had previously claimed for it.

In his *Lenguas Indígenas de México*, Belmar places it in the familiar Mixteco-Zapotecó, but seemingly without proof. Thomas and Swanton say:

Orozco y Berra did not attempt to classify the language, but Pimentel was inclined to refer it to the "Mixteco-Zapotecó" stock or what is here termed the Zapotecan family. This assignment is now universally accepted by students.

¹ *Proceedings of the American Philosophical Society for 1892, and South American Languages*, Philadelphia, 1892.

The following vocabulary in the four languages which we consider comprise the stock is sufficient to establish their relationships. Popoloco and Chocho may be considered as two dialects of the same language; their relationship has been shown above.

	CHOCHO	TRIKE	MAZATECO	IKCATECO
uno	gu	goo	gu	namcuu
dos	yu	hui	jo	lluju
tres	nie	huanen	ja	niegjhe
cuatro	nuo	kahan	nuju	nugjhuh
cinco	yun	hunnug	hu	irstinin
seis	isun	guatan	ju	irshun
siete	yadam	chihi	yato	yatu
ocho	yusin	tehn	ji	gnuhe
nueve	nia	hnhn	naya	hiejhch
diez	tec	chihe	teh	uten
lluvia	ichin	anmha	tzinshajo	dleuibrsti
agua	inda	nehe	di-ujua	ynda
hielo	cinda	yacohui	chaa	dehahnk
tierra	inche	yhuo	nanqui	niingtilcheeh
mar	indaxaum	nehac	pachucu	ndolamar
rio	imda	chaa	dana	yntndar
calabaza	chu	kam	nachu	chuh
frijol	uima	rüne	ñiguma	gmaah
murciélago	uningo	chunhu	ñungu	unungu
templo	ningo	navi	ningushi	nu ungu
pecho	naguim	chiha	nizin	chaacq-jeen
hueso	inda	cu	ninda	ingdta

3. TRIQUE (TRIKE)

Our Trique vocabulary comes from San Juan Copala.

Orozco y Berra places Trique in quite another part of Oaxaca—in the district of Tehuantepec. He says:

Idioma sin clasificar. En la relación de los curatos las cuatro poblaciones que hablan el triqui están confundidas entre las chontales, lo cual no es exacto.

He is evidently wrong in his location of this tribe, for all other authors disagree with him. Sr Belmar marks approximately the same area on his map as we do on ours. In describing their distribution he says:

En la sierra de los mixteca, y en los distritos de Tlaxiaco y Juxtlahuaca habita la tribu *trique*, rodeada enteramente por los mixteca.

Orozco y Berra gives Copala and Chicahuastla as their principal villages. The former is the one from which Dr Peñafiel's vocabulary comes.

Dr Starr's area agrees with Sr Belmar's and our own. Starr gives the following five villages: San Andrés Chicahuastla, Santo Domingo Chicahuastla, San José Chicahuastla, San Martín Ytunyoso, and Copala.

Trique clearly belongs to the Mazatecan stock, as can be seen by the comparative vocabulary given at the end of this section.

IV. CHINANTEC STOCK (*Familia Chinanteca*)

CHINANTEC

The Chinantec stock, spoken in the northern part of Oaxaca, consists of a single language. It is surrounded by Mazateco, Cuicateco, Zapoteco, and Mexican. The vocabularies of Dr Peñafiel come from the districts of Choapan and Tuxtepec; he has, unfortunately, none from the District of Ixtlan, which according to the last census (1910) has many Chinantecos.

District of Tuxtepec:

- San Pedro Loochiapa.
- San Antonio Analco.
- Santiago Tlatepusco.
- Santa Cruz Tepetotutla.
- San Juan Bautista Valle Nacional.
- San Felipe Usila.
- San Lucas Ojitlán.

District of Choapan:

- Leatao San Juan.

Orozco y Berra gives the following list of pueblos:

TEOTALCINGO

- Petlapa.
- Toavela.
- Lovani.
- Tepinapa.
- Tocotepec.
- Lachisola.

VOLOS, SAN PEDRO

- Comaltepec.
- Totomoztla.
- Quiotepec.
- Mineral de San José.
- Temextitlan.
- San Francisco, las Llagas.

Lacova.
Lelana.

Santa María de las Nieves.
Maninaltepec.
Tetitlan.

VALLE NACIONAL

Ozumasin.
Yetla.
Jacatepec.
Chiltepec.
Usila.
Tlatepuzcos.
Mayoltanguiz.

TLACOATEZTEPEC

Quesalpa.
Analco San Antonio.
Tetitlan.

TEPETOTUTLA

Soochiapa.
Tlatepuzcos, San Pedro.
Zapotitlan, San Juan.
Zautla.
Tecomaltepec.
San Antonio del Barrio.

He places Ojitlan with the Mazatecan villages—an evident error, for in addition to Dr Peñafiel's vocabulary from Ojitlan, the writer recorded two, and both of the informants said that Chinantec is the only language spoken there. A vocabulary was obtained also from Chiltepec. In general, however, Orozco y Berra's area is the same as ours. In this connection, he writes:

Chinanteco. En el Departamento de Teotitlan. La Chinantla, con su cabecera del mismo nombre, era un provincia mexicana; los habitantes eran feroces y guerreros; usaban de lanzas de demesurado tamaño para combatir, manejándolas con destreza y seguridad; desde muy temprano se mostraron amigos de los castellanos.

Brinton's description is:

The Chinantecs inhabited Chinantla, which is a part of the State of Oaxaca, situated in the Sierra Madre, on the frontiers of the Province of Vera Cruz. Their neighbors on the South were the Zapotecs and Mixes, on the North and East the Nahuas. They lived in secluded valleys and on rough mountain sides.

The following is quoted from Belmar:

Los Chinanteca

En la parte Norte del Estado de Oaxaca se encuentra el territorio conocido con el nombre de la *Chinantla*, comprendiendo parte de los Distritos de Ixtlán, Choapan, Cuicatlán, Teotitlán, Villa-Alta y Tuxtepec. En este territorio se haya repartida la nación *chinanteca*, y tiene como principales centros de población Yolox, Jocotepec y Usila. Los *chinanteca* confinan con los mixteca, mazateca, mexica, zapoteca y *ayooka* (mixes). El número de individuos que componen esta raza segun los datos estadísticos, es de 18,051.

"The towns of the Chinantecs," says Dr Starr, "are in the Districts of Chicatlan and Villa Alta of Oaxaca. García y Cubas

in 1876 claimed 12,000 population." We have no vocabularies from Cuicatlan or Villa Alta, but we have two from Tuxtepec and Choapan.

Pimentel makes this statement:

Hervás en su *Catálogo de las lenguas conocidas*, considera que el Chinanteco es afín del zapoteco, así como el mazateco. Respecto á este idioma estoy conforme con la opinion de Hervás, según lo que anteriormente he manifestado; pero del Chinanteco no encuentro ni muestras que estudiar, ni noticias exactas sobre su filiación. Burgoa en su *Historia Geográfica*, habla del Chinanteco como de un idioma áspero y violento, lo cual no conviene con el zapoteco que es dulce y suave. Sin embargo, como el acento puede cambiar sin alterarse el fondo de un idioma, no es decisiva la indicación de Burgoa, y en consecuencia, admitiremos al Chinanteco en la familia mixteco-zapoteco aunque en el concepto de *dudoso* en su clasificación.

It hardly seems right to classify a language in a family, even with the "concept of doubt," when neither material by which to judge it nor any notices concerning its classification is found.

Brinton discusses the language both in *The American Race* and in his paper read before the American Philosophical Society, January 15, 1892. Therein he describes the language and, noting its entire dissimilarity of morphology and words to the surrounding idioms, reaches the conclusion that it is the only representative of a linguistic stock. In *The American Race* Brinton quotes Berendt in the following words:

Spoken in the midst of a diversity of languages connected more or less among themselves, it is itself unconnected with them, and is rich in peculiar features both as to roots and its grammatical structure. It is probable that we have in it one of the original languages spoken before the advent of the Nahuas on Mexican soil, perhaps the mythical Olmeca.

León considers Chinantec as belonging to the Mixtecan-Zapotecan family, on what ground is not known, as he presents no new evidence nor does he quote his authorities. Belmar likewise puts it in the Mixteco-Zapotecan family, and also fails to present adequate proofs. Thomas and Swanton, however, consider it as the sole representative of the Chinantec stock.

The Chinantec vocabularies collected by Dr Peñafiel have been compared with those collected by him from the surrounding stocks, particularly Mazateco, Mixteco, and Zapoteco, but no resemblance

between them could be found. It seems impossible to classify Chinanteco as a member of the Zapotec stock, as other authors have done, therefore Brinton's classification is followed and its independence as a stock language retained.

V. CHONTAL STOCK (*Familia Chontal*)

CHONTAL

Chontal is spoken in a small area close to the Pacific ocean in the districts of Tehuantepec and Yautepec. The towns in which it is spoken are scattered among the Zapotec settlements. Our vocabularies come from the following places:

District of Tehuantepec:
Tequistlan.
Huamelula.

District of Yautepec:
Santa María Ecatepec,
Santa Lucía Mecaltepec.
Santa María Candelaria.
Chontecomatlan.

Orozco y Berra says it is spoken in the Department of Tlacolula and gives the following villages:

Ecatepec, Santa María:

Teipán.

Jilotepequillo.

Acatepec.

Chontecomatlan.

Tlahuilotepic.

Ixcatepec.

Mecaltepec

Chongo.

Sosoltepec.

Chiltepec.

Petacaltepec.

Peña.

Jamiltepec.

Tecolotepec.

Candelaria.

Suchiltepec.

Topiltepec.

Tlacolulita.

Ecatepec, San Miguel.

Alotepec.

Zapotitlan.

Tepalcatepec.

Belmar describes their distribution in the following manner:

Estos pueblos en el Estado de Oaxaca comprendían en tiempo del régimen colonial el partido llamado chontales, cuya cabecera fué el pueblo de Santa María Ecatepec. Se extendían de Oriente á Poniente de Huamelula. . . .

En la actualidad dicha nación chontal se haya extendida en el Estado de Oaxaca, en los distritos de Yautepec y Tehuantepec.

Los chontales se encuentran al Sureste de la cabecera de Yautepec, dis-

frutando de los diferentes climas, según la fragosidad de sus terrenos, y rodeados por los mixes, los zapoteca y los zoque, de cuyos usos y costumbres participan.

Regarding the Chontal and their language Dr Starr says:

An unfortunate confusion exists regarding these people. Orozco y Berra is partly to blame for it; Brinton has increased the confusion by an attempt to remove it. Orozco's error is in calling some of the more important Chontal towns Trique: he also gives a list of real Chontal towns, but at the same time introduces at least one Zapotec town into the list,—Tlacolulita. The Oaxaca Chontals live in the District of Tehuantepec. Brinton claims that Chontal is a misnomer: that it is a word meaning stranger, and not a tribal name, and that it is equally applicable to many different tribes. That the word is Aztec, meaning stranger, is true: that the word may be applicable to various tribes may be true, though not yet proved. That the name is regularly and consistently applied to the towns of Oaxaca above indicated is certain; that the people living in these towns call themselves Chontals, and speak one and the same language which they call Chontal, is also certain.

In view of these facts it seems better to discontinue the use of the name Tequixtlatecan, both for the stock and its languages. Concerning the affiliation of Chontal much difference of opinion exists. Orozco y Berra classed it as a member of the Mayan family; Pimentel considered it a separate stock; both León and Belmar regarded it as a member of the Nahuatlán stock, while Brinton thought it probably belongs in the Yuman. Thomas and Swanton make no statement regarding its relationship. As no Yuman material was at hand the writer will call it a separate stock, for no resemblance to Mexican or to Maya is apparent.

VI. HUAVE STOCK (*Familia Huave*)

HUAVE

Huave is spoken in a few villages in the districts of Juchitan and Tehuantepec on the Pacific coast. The vocabularies of Dr Peñafiel come from the following towns:

District of Juchitlan:

San Francisco Hixhuatán.

San Dionisio del Mar.

Santa María del Mar.

District of Tehuantepec:

San Mateo del Mar.

Orozco y Berra lists these four towns and Ixhuatlan. Juan de Torres, writing in 1580, described them as living in the same locality

which they now inhabit. Belmar gives the same villages as Orozco y Berra, but says: "Ixhuatlán se haya abandonado en la actualidad." Dr Starr confirms this in the following words:

They have today but four villages, San Mateo del Mar, Santa María del Mar, San Francisco del Mar, and San Dionisio del Mar. Ixhuatan, mentioned by Orozco, has long been abandoned. We can say nothing of the language but present a brief vocabulary. The people are conservative and are rarely visited by white men. Their towns lie at the edges of, or near, long and narrow, shallow lagoons of salt water reaching inland from the Pacific Ocean.

A great deal of difference of opinion exists over the classification of Huave. Orozco y Berra did not know how to classify it, but believed it to be related to some linguistic family in Guatemala, for what reason he does not say. His statement follows:

Su lengua es diferente de las otras que se hablan en México: *huave* hemos visto que la nombran en los libros consultados, solo el MS. de Juan de Torres la llama guazonteca (huazonteca), por lo cual le damos ambas denominaciones: no la hemos clasificado y creemos que corresponde á alguna de las familias de Guatemala.

Dr León places it in the family Maya-Quicheana. Belmar also believes it related to Maya and gives a list of words to prove it, but there does not seem to be much similarity between Maya and Huave. Brinton was of the opinion that "the vocabularies of their tongue are too imperfect to permit identification." Thomas and Swanton believe that it constitutes a family in itself. "So far as is known," they say, "the language cannot be assigned to any recognized stock—therefore for the present it must remain as the representative of a distinct family." We agree with them in this and accordingly class it as a distinct stock.

VII. ZOQUE STOCK (*Familia Zoque*)

Mixe and Zoque are the only members of this family found in Oaxaca. Thomas and Swanton include Old Popoloco and Tapachula in the same family. They follow Berendt in regard to Popoloco, and Sapper in respect to Tapachula. As we have no material from these two languages we cannot render an opinion. The resemblance and the relationship between Mixe and Zoque is so close and so well established that it is needless to quote vocabularies.

1. ZOQUE

Zoque is spoken in the extreme eastern portion of Oaxaca and in the adjoining districts of Chiapas and Tabasco. When treating of their distribution, Orozco y Berra says:

Los Zoques se encuentran derramados en Chiapas, Tabasco, y Oaxaca, tienen al Norte el mexicano y el chontal, al Este el tzendal, el tzotzil y el chia-panico, al Sur el mexicano y al Oeste el huave, el zapoteco, y el mixe.

He gives the following list of Zoque villages in Oaxaca:

Chimalapa, San Miguel.	Zanatepec, Santo Domingo.
Chimalapa, Santa María.	Niltepec, Santiago.
	Tapana, San Pedro.

Dr Peñafiel's vocabularies come from San Miguel Chimalapa and Santa María Chimalapa of the district of Juchitan. They are the first two of Orozco y Berra's list.

2. MIXE

Mixe is spoken to the west of Zoque. We are particularly well informed about the names of their villages, having the lists of Orozco y Berra, Belmar, and Peñafiel.

The latter's vocabularies come from the following places:

District of Choapan:	District of Villa Alta:
Atitlan.	Mixistlan.
Puxmeteca.	Santa María Asunción Totontepec.
District of Juchitan:	San Pablo Ayutla.
San Juan Guichicovi.	Tlahuilototepec.
District of Tehuantepec:	San Cristobal Chichicaxtepec.
Mazatlan San Juan.	District of Yautepec:
	Cacalotepec.
	San Miguel Quetzaltepec.

Belmar has made a thorough study of the Mixe and gives the following villages. Those found in our list are indicated by an asterisk.

District of Choapan:	Parroquia de Puxmetecán:
Parroquia de Atitlán:	Puxmetecán* Cotzacón
Atitlán*	Ozolotepec Chisme
Alotepec	Candayoc
Ayacastepec	Parroquia de Ayutla:*
	Ayutla* Tamazulapam
	Tepuxtepec Tlahuilototepec*
	Tepantlalli

District of Juchitán:		District of Yautepec:	
Guichicoví*		Parroquia de Juquila:	
District of Tehuantepec:		Cacalotepec*	Ocotepec
Acatlán	Mazatlán*	Acatlancito	
Chimaltepec	Tutla	Parroquia de Quezaltepec:*	
Malacatepec		Canotlán	Ixcuintepec
District of Villa Alta:		Huitepec	Coatlán
Parroquia de Chichicastepec:*		Parroquia de Jilotepec:	
Tiltepec	Huitepec	Jilotepec	Nazaviguiti
Mixestlán*	Metepec	Agua Blanca	Lachixonase
Yacochi			
Parroquia de Totonepec:			
Amatepec	Tonagula		
Moctun	Jayacastepec		
Tipitongo	Ocotepec		
Jareta			

Orozco y Berra's list corresponds closely with this. It is as follows:

Acatlan San Pedro	Metepec
Tutla	Puxmecatan
Mazatlan	Candayó
Malacatepec	Cotzocon
Chimaltepec	Chisme
Atitlan	Guichicoví, San Juan
Sacatepec	Boca de Monte
Alotepec	Jilotepec Santiago
Metaltepec	Agua blanca
Ayacaxtepec	Jilotepec San Pedro
Ayutla	Jilotepec San Sebastian
Tepustepec	Jilotepec San Cruz
Tamasulapan	Nizaviquinta
Tepantlali	Lachixonaxe
Tlahuitoltepec	Juquila
Chichicastepec	Cacalotepec
Mixistlan	Ocotepec
Huitepec, Santa Maria	Acatlacinto
Tiltepec	Lachixila
Yacochi	Quiavicusas

Xovaquia	Totontepec
Lachixela	Jazacastepec
Quetzaltepec	Amatepec
Coatlan	Jareta
Camotlan	Tonogua
Camollan	Ocatepec
Ixcuintepec	Tepitongo
Huitepec	Moetun

VIII. MEXICAN STOCK (*Familia Mexicana*) MEXICAN (AZTEC)

Dr Peñafiel has five Mexican vocabularies. They come from the following places:

District of Silacayoapam:	District of Tuxtepec:
Santa Ana Rayón	Tuxtepec
District of Teotitlan:	District of Pochutla:
Santa María Teopoxco	Pochutla
San Martín Toxpalan	

These five vocabularies represent three distinct dialects. The three vocabularies from the districts of Silacayoapam and Teotitlan belong to the Puebla dialect, which is very similar to classical Mexican, or that dialect spoken in the valley of Mexico, the chief difference being that the glottal stop is replaced by an unvoiced palatal spirant.

The other two vocabularies represent quite distinct dialects.

The Tuxtepec Dialect

The dialect spoken in Tuxtepec shows many phonetic differences, among the most important being the use of *t* in Tuxtepec where the classical Mexican has *tl*. The absence of the saltillo is noticeable. Both *k* and *g* occur in the Tuxtepec dialect, where in the classical dialect only *k* occurs. Final *n* is dropped in Tuxtepec. Some of the differences of a morphological nature are: the retention of the *t* in the possessive form where it is dropped in the valley (*amat* paper, *nuamat* my paper, the classical correspondents being *amatl* and *namauh*); the absence, with one exception, of reduplicated plurals, such as *cocoa* plural of *coatl*, snake; the absence of the preterite form of the verb with an *o* augment.

During the writer's stay in Tuxtepec careful inquiry was made in regard to other possible Mexican villages nearby, but none was found. The nearest villages are all Chinantec, some of which are not much more than fifteen miles from Tuxtepec. The Mazatecan villages are much nearer than the nearest Mexican town.

Amatlan, lower down the river Popolhuapam, is the nearest Mexican town, and is distant about 75 miles. There were no informants whose services could be obtained, but the testimony of the people of Acoula, who still speak Mexican fluently, is that the two villages spoke the same dialect. Acoula is ten or fifteen miles distant from Amatlan. The dialect of Amatlan is quite different from Tuxtepec, although neither have the *tl* sound. In fact, it is quite probable that the dialects of most of the Mexican area did not have that sound. In the grammar of Cortés Zedeña, of the bishopric of Guadalupe, it is absent, and Dr Walter Lehmann finds it also absent from the Central American dialects. It probably does not occur in Chiapas and Tabasco, and it is absent in Pochutla.

Besides this feature, the Pochutla dialect shows many interesting differences from the classical dialect. Among the most important is the shifting of accent. For the classical dialect it is always on the antepenult; in the Pochutla dialect it is almost always on the ultima.

NAMES OF THE VILLAGES FROM WHICH PEÑAFIEL'S VOCABULARIES COME

I. FAMILIA ZAPOTÉCA:

1. Zapoteco.

Distrito del Centro.—San Bartola Coyotepec.

Distrito de Choapin.—Yahuive, Jaltepec.

Distrito de Ejutla.—Santa María Chichihualtepec, Coatecos Altos, San Vicente Coatlán, San Martín Lachila, Santa Cruz Nixila, San Andrés Sabache.

Distrito de Jamiltepec.—San Antonio Ocotlán.

Distrito de Juchitán.—Juchitán, Espinal, Unión Hidalgo.

Distrito de Miahuatlán.—San Mateo Río Hondo, San Juan Mixtepec, San Agustín Mixtepec, San Luis Amatlán, San Pablo Coatlán, Santa María Coatlán, San Andrés

Paxtlán, Santiago Papagula, Santiago Xanica, Santa María Ozolotepec, San Juan Ozolotepec, Santo Tomás Tamazulapan, Santa Caterina Cuixtla, Santa Cruz Ozolotepec.

Distrito de Ocotlan.—Ocotlan de Morelos, Santiago Apostol, Santa Ana Zegache, San Pedro Apostol, Ocotlan Magdalena, San Baltasar Chichicapan, Santa Lucía Ocatlan, San Miguel Tilquiapan, Santa Tomás Jeleza, Santa Martín Tilcayeta.

Distrito de Pochutla.—Piñas San Mateo, San Juan Loxicha.

Distrito de Tehuantepec.—Tehuantepec, Tlacotepec, Jalapa del Estado.

Distrito de Tlacolula.—Tlacolula de Matamoros, Villa de Mitla, San Pablo Mitla, Tlacoahuaya, San Juan Teitepac, San Pedro Quiatoni, San Dionisio Ocotepec, Teotitlan del Valle, San Juan Guelavía, San Lucas Quiavini, Santiago Matatlan, Santa María Albarradas.

Distrito de Tlaxiaco.—San Pedro el Alto, Yolotepec de la Paz, Chalcatongo, San Juan.

Distrito de Villa Alta.—Beltaza, Tanetze, Talea Lachiroung, Tabag, Yazona, San Francisco Cajonos, Zoochila, Xagalaxi, Lachixila Vijanos.

Distrito de Zimatlán.—Zimatlán, Santa María Zachila, Huixtepec, Santa Cruz Mixtepec, Ayoquezco.

Distrito de Yautepec.—San Bartolo Yautepec, Santa María Asunción Quiegolani, Quiechapa.

2. Solteco.

Distrito de Villa.—Alvarez (Zimatlán), San Miguel Solo.

3. Chatino.

Distrito de Juquila.—San Juan Quiahije, Santa Cruz Tepenixtlahuaca, Santa María Tlapanalquiahuitl, San Juan Lachao, Zensontepec.

II. $\frac{3}{4}$ FAMILIA MIXTECA:

1. Mixteco.

Distrito de Huajuapán.—Huajolotitlan, Miltepec Santiago, Santiago Chazumba, San Martín Zacatepec, Tequistepec.

Distrito de Jamiltepec.—Jamiltepec.

Distrito de Juquila.—Tututepec.

Distrito de Juxtlahuaca.—Juxtlahuaca, San Juan Mixtepec, Tecomaxtlahuaca, San Juan Lagunas, Santiago Coycoyan, Santa Caterina Noltepec.

Distrito de Nochistlan.—Nochistlan, Yahuitlan, Santo Domingo, Yodocono Magdalena, Tilantongo Santiago, Magdalena Jaltepec, Apoala Santiago, Teozacoalo San Pedro, San Pedro Cantaros, Tecomatlan, San Miguel.

Distrito de Silacayoapan.—San Pedro, San Miguel Ahuehuetitlan, Calihuala, Tlapacingo San Francisco.

Distrito de Teotitlan.—San Juan Coatzopan.

Distrito de Teposcolulu.—San Vicente Nuña, San Pedro Martín Yucunana, Tlatayapan, Santa María Tiltepec.

2. Cuicateco.

Distrito de Cuicatlan.—Cuicatlan, Concepción Pápalo, San Francisco Chapulapa.

3. Amuzgo.

Distrito de Jamiltepec.—San Pedro Amuzgos.

III. FAMILIA MAZATECA:

1A. Chocho.

Distrito de Coixtlahuaca.—Coixtlahuaca, Jicotlan Tequis-tepec, San Jerónimo Otlá, Tlapitepec.

Distrito de Teposcolulu.—Santa María Tamazulapan, San Antonio Acutla.

1B. Popoloco.

Distrito de Coixtlahuaca.—Coixtlahuaca, Santo Domingo Tepene.

2A. Mazateco.

Distrito de Teotitlan.—San Lorenzo, Cuanelcuilitla, Huautla de Jimenez, Huechuetlan San Francisco.

Distrito de Tuxtepec.—Jalapa de Diaz, San Miguel Soyaltepec, San Pedro Ixcatlán.

2B. Ixcateco.

Distrito de Teotitlan.—Ixcatlán Santa María.

Distrito de Tuxtepec.—Ixcatlán.

3. Trique.

Distrito de Juxtlahuaca.—San Juan Copala.

IV. FAMILIA CHINANTECA:

1. Chinanteco.

Distrito de Tuxtepec.—San Pedro Loochiapa, San Antonio Analco, Santiago Tlatepusco, Santa Cruz Tepetotutla, San Juan Bautista valle Nacional, San Felipe Usila, San Lucas Ojitlan.

Distrito de Chiapam.—Leatao San Juan.

V. FAMILIA CHONTAL:

1. Chontal. Tequistlan.

Distrito de Tehuantepec.—Tequistlan, Huamelula.

Distrito Yautepec.—Santa María Ecatepec, Santa Lucía Mecaltepec, Santa María Candelaria, Chontecomoatlan.

VI. FAMILIA HUAVE:

1. Huave.

Distrito de Juchitan.—San Francisco Hixhuatán, San Dionisio del Mar, Santa María del Mar.

Distrito de Tehuantepec.—San Mateo del Mar.

VII. FAMILIA ZOQUE:

1. Mixe.

Distrito de Choapan.—Atitlan, Puxmetacan.

Distrito de Juchitan.—San Juan Guichicovi.

Distrito de Tehuantepec.—Mazatlan San Juan.

Distrito de Villa Alta.—Mixistlan, Santa María Asunción Totontepec, San Pablo Ayutla, Tlahuitoltepec, San Cristóbal Chichicastepec.

Distrito Yautepec.—Cacalotepec, San Miguel Quetzaltepec.

2. Zoque.

Distrito de Juchitan.—San Miguel Chimalapa, Santa María Chimalapa.

VIII. FAMILIA MEXICANA:

1. Mexican.

Distrito de Pochutla.—Pochutla.

Distrito de Silacayoapam.—Santa Ana Rayón.

Distrito de Tuxtepec.—Tuxtepec.

Distrito de Teotilan.—Santa María Teopoxco, San Martín Toxpalan.

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DISCUSSION AND CORRESPONDENCE

W J MCGEE¹

WILLIAM JOHN MCGEE, or, as he preferred to be known, W J McGee, was born on a farm at Farley, Dubuque county, Iowa, April 17, 1853, and died of cancer at Washington, D. C., September 8, 1912. He was the son of James and Martha (Anderson) McGee, of Scotch-Irish ancestry, his paternal great-great-grandfather having been Alexander McGee of County Down, Ireland, who emigrated to the United States, while on the maternal side the line leads back to Samuel Anderson, of Irish parentage, who was born at sea in 1740. Both of these grandparents espoused the American cause in the Revolution. In his early years, although large for his age, McGee was frail in health, averse to manual labor, and rather uncertain in disposition; and even in later life, notwithstanding his apparent robustness, he was not so strong physically as was generally supposed.

McGee attended irregularly a county district school, of the kind common to sparsely settled communities, until he was about fourteen years of age, from which time his education was almost entirely the result of intense individual effort, in which he was urged and stimulated by his mother, an excellently well-informed woman, who was anxious that her children should be well educated. The last one apparently to give him formal instruction, in 1867-68, was an elder brother. The boy proved to be an apt pupil, acquiring knowledge with wonderful ease and retaining it in what later developed into a really remarkable memory. These home studies were continued through the years 1867 to 1874, and included Latin, German, and higher mathematics. He also read law, and to a slight extent engaged in justice-court practice. His self-acquired knowledge of mathematics, which included astronomy and surveying, combined with field instruction by a maternal uncle, made him an excellent surveyor, and his services in this capacity were not only much in demand in the neighborhood, but increased his powers of observation during the outdoor work that ultimately led him into the paths of

¹ Much of the information contained in this notice, especially with reference to the early life of Dr McGee, was kindly furnished by Dr F. H. Knowlton, of the United States Geological Survey.

geology and anthropology. Meanwhile, when about twenty years of age, he worked at the forge and became engaged in the manufacture and sale of agricultural implements. In conjunction with an elder brother and a cousin he invented and patented, June 9, 1874, an improved adjustable cultivator, but the device was not a commercial success.

As is well known, McGee's first serious scientific work was in the field of geology. In 1878 he was enrolled as a member of the American Association for the Advancement of Science in affiliation with its section of geology, and in the same year published his first paper on a geological topic. From 1877 to 1881 he prosecuted, as a private enterprise, a topographic and geological survey of an area in northeastern Iowa covering about 12,000 square miles.

It was evidently during this field work that McGee's interest in anthropological research was first aroused. In 1878 appeared his first paper on an anthropological subject—"On the Artificial Mounds of Northeastern Iowa, and the Evidence of the Employment of a Unit of Measurement in their Erection"—an immediate outcome of his geological studies and surveys in the preceding year. At the meeting of the American Association for the Advancement of Science at St. Louis in 1878 he presented a paper "On an Anatomical Peculiarity by which Crania of the Mound Builders may be Distinguished from those of Modern Indians," in which, as in the case of his earlier paper, were presented views that, while characteristic of the period, are untenable in the light of present knowledge but serve to illustrate the great advance made in the elucidation of archeological problems during subsequent years.

McGee's first work under Federal auspices was a report on the building stones of Iowa, prepared for the Tenth Census (1880), published in 1884. This, but more especially his careful work on the multifarious phenomena of glaciation in the upper Mississippi valley, had attracted wide attention, and in July, 1883, when thirty years of age, he was called to the United States Geological Survey by its director, Major J. W. Powell, where for ten years he served as a geologist and performed important scientific work. On June 30, 1893, McGee resigned from the Geological Survey to assume, on the following day, the active charge of the Bureau of American Ethnology, under the directorship of Major Powell, with the title of ethnologist, and a year later his designation was changed to ethnologist-in-charge. During his service with this Bureau, which extended through a decade, he continued active scientific work whenever the pressure of the administrative duties of a Government

office permitted. His most noteworthy undertaking in this direction, which resulted in his most important contribution to anthropology, was a study, during two seasons, of the Seri Indians of Tiburon island in the Gulf of California and of the adjacent coast of Sonora, in 1894 and 1895. With a small party he conducted the only scientific expedition to Tiburon island that had ever been attempted, and prepared a topographic map of the island home of the Seri, but as the Indians fled on the approach of the party, McGee did not come in contact with them on the island, depending for his information on a band employed by a Mexican ranchman near the Sonora coast. The results of these studies formed one of the accompanying papers of the Eighteenth Annual Report of the Bureau of American Ethnology. Subsequently he spent several weeks in northern Lower California, making observations among the Cocopa Indians, but the results were not published. Based chiefly on material gathered by the late J. Owen Dorsey, McGee prepared a memoir on "The Siouan Indians" to serve as an introduction to Dorsey's "Siouan Sociology," both of which papers appear in the Fifteenth Annual Report of the Bureau. Based on a collection of Peruvian trephined skulls collected by Dr M. A. Muñiz, of Peru, McGee prepared, in conjunction with Dr Muñiz, a descriptive paper which was published in the Sixteenth Annual Report of the Bureau, while in the Nineteenth Report he presented a paper on "Primitive Numbers," with the result that Cornell College, in his home state, conferred on him the degree of LL.D. in 1901. McGee's anthropological bibliography alone is an extended one, while his writings on scientific subjects generally are extremely varied and extensive. He resigned from the Bureau of American Ethnology, July 31, 1903, to assume charge of the department of anthropology of the Louisiana Purchase Exposition at St. Louis, where he was active also in organizing the World's Congress of Arts and Sciences in 1904, of which he was senior speaker in its department of anthropology. At the close of the exposition he was appointed director of the "St. Louis Public Museum," which never developed much more than the name; and in 1907, after spending a period in the Papagueria desert of Sonora and Arizona, he became associated with the Bureau of Soils in the United States Department of Agriculture as an expert in subsoil erosion and subsoil waters, which position he held until the time of his death. Meanwhile he became interested in the conservation movement and was selected as vice-chairman and secretary of the Inland Waterways Commission, of which he was the leading spirit and in whose interest he was the most active worker.

In 1888 he married Anita Newcomb, who, with a son and a daughter, survive him.

McGee was a man of commanding presence, of remarkable mental vitality, ingenuity, and versatility, and of almost fanatical perseverance. He had a personal fondness for the unusual, as his preference in respect to the initials of his given name and his strong liking for the coinage of new terms suggest. But McGee was human withal, and the most generous character, both with his slender purse and his store of knowledge, that any of his host of intimates ever knew. He was sympathetic and helpful, with almost unlimited ambition, and ever ready, whatever the cost, to resent any seeming interference with it. He was remarkably alert and resourceful, as an incident of one of the meetings of the American Association for the Advancement of Science will show. A local divine, mistaking McGee for a fellow minister, invited him to fill his pulpit at a Sunday evening service. McGee, although not affiliated with any church, immediately accepted, and selecting as his text the words "Love ye one another," delivered an address remarkable for its eloquence and replete with human sympathy and understanding.

McGee's interest extended to almost every branch of science, as his constant activities in behalf of and his affiliation with many scientific bodies attest. He became a member of the Anthropological Society of Washington soon after coming to the capital and served as its president from 1898 to 1900. In 1902 he was foremost in the founding of the American Anthropological Association, of which he was elected the first president. When the *American Anthropologist* was established in 1899, McGee became one of the two constructive owners, sharing its financial responsibilities before it came under the control of the American Anthropological Association. The scientific and other learned organizations of which he was an active member are too numerous to list here.

The courage and fortitude so characteristic of McGee in his most active days he did not permit to desert him toward the close of his life. Aware of his fatal malady long before the end, he determined to note carefully the progress of the disease (which first manifested itself in the Sonora desert fourteen years before), in the hope that the interests of learning might be subserved. The result of these observations was published in *Science* shortly after his death. Notwithstanding intense suffering and separation from all his kindred, and with full knowledge of the inevitable, he worked assiduously on the final revision of a scientific memoir which he finished on the eve of the final dissolution.

W J McGee was an unusually remarkable man. It would be a difficult task to appraise now the value of his varied contributions to knowledge, to recall even a tithe of his generousities, or to recount the



W. J. MCGEE—1883-1912

multitude of his interests. From early manhood he was a strong advocate of the diffusion of knowledge, and his last efforts were devoted to this lifelong purpose. The following is an extract from his will:

"Pursuant to an intention fixed in early manhood on learning that a certain State provided by law that medical graduates should have had dissecting-room experience, and yet made so little provision for the requisite subjects; and conformably with the shocking economic waste represented by the cities of the dead in the long-settled portions of the country; and in accordance with my custom of devoting my efforts and myself to the public good, I give and bequeath my body for purposes of dissection to any medical college selected by my executor."

F. W. H.

ROBERT FLETCHER

DR ROBERT FLETCHER, one of the founders of the Anthropological Society of Washington in February, 1879, died at Washington, November 8, 1912.

Dr Fletcher was born in Bristol, England, March 6, 1823, and therefore was in his ninetieth year at the time of his death. His father, also named Robert Fletcher, was an attorney; his mother was Esther Wall. Dr Fletcher was educated at private schools and later studied law for two years in his father's office. He then turned his attention to medicine, pursuing his studies first at the Bristol Medical School, then at the London Hospital, being graduated from the latter institution after five years' study. Before his death Dr Fletcher was the oldest living graduate. He was made a member of the Royal College of Surgeons of England and of the London Society of Apothecaries in 1844.

In 1843 Dr Fletcher married Miss Hannah Howe of Bristol, and three children were born: Arthur Henry Fletcher, Lieutenant, U. S. N.; Robert Howe Fletcher, Captain, U. S. A., and Catherine Agnes Fletcher, the wife of general Leon A. Matile, U. S. A. Dr Fletcher's wife died at Washington, January 20, 1889.

Dr Fletcher came to the United States and settled at Cincinnati, Ohio, in 1847, where he practised his profession. At the outbreak of the Civil War he entered the service of the United States and spent two years in active duty in the field as Surgeon of the First Ohio Volunteers. He was then commissioned as Surgeon, U. S. Volunteers, and given charge of military hospital No. 7, at Nashville, Tennessee. Later he was appointed Medical Purveyor. At the close of the war he was

breveted Lieutenant-Colonel and Colonel for faithful and meritorious service.

In 1871 Dr Fletcher entered the office of the Provost-Marshall-General of the Army in Washington, and, in association with Dr J. H. Baxter, of the Army, and others, prepared the two volumes, published in 1875, entitled *Statistics, Medical and Anthropological, of the Provost-Marshall-*



DR. ROBERT FLETCHER

General's Bureau, Derived from Records of the Examination for Military Service in the Armies of the United States during the late War of the Rebellion of over a Million Recruits, Drafted Men, Substitutes and Enlisted Men. Dr Fletcher wrote especially the portion bearing the title "An Outline of the History of Anthropometry, or the Attempts to Ascertain the Proportions of the Human Body" (pp. lxii-lxxxviii), including a bibliography which could have been

compiled at that time only by great labor combined with good judgment and an extended knowledge of ancient and modern languages. This monumental work aggregates 1,450 pages.

In 1876 Dr Fletcher was appointed an Acting Assistant Surgeon, U. S. A., and was associated with Dr John S. Billings, of the Army, who was in charge of the Library of the Surgeon General's Office. He now became engaged in the preparation of the great *Index Catalogue* of the

Library, which has appeared in yearly volumes beginning in 1880 and has entered a second series, with a total of thirty-three volumes. This work is another monument to Dr Fletcher's industry, knowledge, and good judgment. In addition, a monthly *Index Medicus* was commenced in 1879, with Dr Fletcher as associate editor. After twenty years the publication was discontinued, but it was resumed in 1903 and has continued to the present time, with Dr Fletcher as editor-in-chief until 1912.

The study of law pursued by Dr Fletcher making the subject of medical jurisprudence especially attractive to him, he lectured thereon at the medical department of Columbian (now George Washington) University from 1884 to 1888, and at Johns Hopkins Medical School from 1897 to 1903.

Dr Fletcher was a member of a number of societies, including the following: Anthropological Society of Washington (of which he was President for several terms), American Folk-lore Society, American Academy of Political and Social Science, American Statistical Association, American Association for the Advancement of Science (a fellow), American Medical Association, College of Physicians and Surgeons of Philadelphia, Medical Society of the District of Columbia (honorary), Philosophical Society of Washington (sometime President), Washington Academy of Sciences, Military Order of the Loyal Legion, Société d'Hygiène of Paris. In 1910 Dr Fletcher received a gold medal from the Royal College of Surgeons, a distinction that had been accorded to physicians only eleven times in ninety years. On him was conferred the honorary degree of Doctor of Medicine in 1884 by Columbian University, and only a few days prior to his death he received the degree of M.D. from the Bristol Medical College, in which he first attended medical lectures. A life-size portrait of Dr Fletcher graces the Library of the Surgeon General's Office in the Army Medical Museum building at Washington.

Dr Fletcher was rather tall and slender; in manner always extremely dignified, and ever courteous and helpful. His store of knowledge of medicine and of the collateral sciences and their bibliography was always at the service of those in quest.

The more important writings of Dr Fletcher, in addition to those above mentioned, are as follows:

- Prehistoric Trephining and Cranial Amulets. 1882.
- Paul Broca and the French School of Anthropology. 1882.
- Human Proportion in Art and Anthropometry. 1885.
- Tattooing among Civilized Peoples. 1885.

- Myths of the Robin Redbreast in Earlier English Poetry. 1898.
 The Vigor and Expressiveness of Older English. 1890.
 The New School of Criminal Anthropology. 1891.
 The Poet, Is he Born, not Made? 1893.
 Anatomy and Art. 1895.
 Brief Memoir of Colonel Garrick Mallory, U.S.A. 1895.
 Medical Lore in the Older English Dramatists and Poets (Exclusive of Shakespeare). 1895.
 The Witches' Pharmacopœia. 1896.
 Scopelism. 1897. (Said to be the first paper on this subject in English.)
 A Tragedy of the Great Plague at Milan in 1630. 1898.
 On Some Diseases bearing the Names of Saints. 1912.
 Columns of Infamy. (In the present issue of the *American Anthropologist*.)

D. S. LAMB

ANDREW LANG

IN the death of Mr Lang anthropology has lost one of its most picturesque and persevering students. The light touch, the quaint humor, the literary tone, the flashes of an intelligence better remembered for its keenness and quick perception than for its depth and breadth, are inseparably bound up with Mr Lang's reputation in scientific circles. He would prefer this guise to that of erudite research, so his whole literary personality would seem to declare,—and to this ideal he was consistent. Such were, in the main, the characteristics of his articles in *Man* and in *Folk Lore*, his contributions to *Anthropology and the Classics*, to *Anthropological Essays dedicated to E. B. Tylor*, and in such of his books as *Magic and Religion*, *Myth, Magic and Religion*, *The Making of Religion*, and *The Secret of the Totem*. He had announced, prior to his death, that we might expect other volumes from his pen. They will probably be forthcoming in posthumous editions.

Mr Lang's argumentation, too frequently evasive and half-serious, was now and then incisive and illuminating. The theory that totems were the result of the restriction of a given group to one particular kind of food was effectively answered by the retort that "man cannot live by witchetty-grubs alone." But Mr Lang's greatest service to anthropology has been by way of enlisting others in its service through the enticing chapters of his earlier works. Many have been turned by his writings to the great field of opportunity and have contributed, each in his way, some bit of knowledge or guidance to the study of man.

Mr Lang was more than an ethnologist, more than a writer and researcher in mythology, religion, magic, and various forms of social

organization. He was an untiring student of psychical research, of folk-lore, of the classics, of literature in almost every age and clime, and a ready writer on all of these topics. In each of these fields he has done something to perpetuate his memory. Hence his fame is in no wise dependent upon his ethnological contributions and is well secured without them. He was rather the *litterateur*—and as such he was probably without a peer in the English-writing world,—who made a few sallies into ethnology and kindred subjects. We must, therefore, value his contributions not as the contributions of one who has enlisted for this cause, but rather as of one whose work lay elsewhere but whose sympathies and interests and labors in the intervals of respite from his life-work were with us. It is, I think, in this spirit that we should look upon the work of Mr Lang and add to the appreciation of a score of departments of *litteræ humaniores* a tribute of gratitude for the work that has helped forward the Science of Man.

W. D. WALLIS.

RELATIONSHIP OF THE INDIAN LANGUAGES OF CALIFORNIA

ANTHROPOLOGICALLY California has always been noted for its linguistic diversity, which has been accepted as being greater than that of any other part of the world. Since Powell's standardizing classification, which allotted twenty-two distinct families of native languages to the state, only one consolidation, that of Shasta and Achomawi, has been positively asserted and generally accepted. Two or three other pairs of languages have for some time seemed to be probably each reducible to a common origin; but the specific similarities determined were weakened by the frequent occurrence of both lexical and grammatical resemblances between many other families which there was no justification for connecting genetically. These grammatical resemblances have been several times discussed by us and attributed to the inter-influence of distinct families, due to geographical contact. The lexical similarities we have assumed, in all but a few cases, to be the result of borrowing. It became clear that until the degree and extent of this mutual influencing and borrowing among unrelated languages were more precisely ascertained, the relationships suspected in the few instances referred to were capable of explanation through such borrowing on a slightly more intensive scale, and would therefore never advance beyond the stage of probability. For this reason we undertook some time ago a comparison of more than two hundred stem words in all the languages and dialects

of California so far as material was available. From the time the material began to be assembled, some interesting results as to the character and scope of the borrowing of words commenced to appear; but after analysis of the collected information had progressed beyond a certain point, it became apparent that the only satisfactory explanation of the resemblance between certain languages was genetic relationship. On the basis of these indications the grammatical information extant on the same languages were reexamined, and in every instance was found strongly confirmatory. Lexical and structural similarities coinciding and being relatively abundant, true relationships have been accepted as established. The new larger families and their components are:

Penutian, comprising the groups formerly known as Maidu, Wintun, Miwok, Costanoan, and Yokuts. This is a relatively large and compact family, occupying practically the whole of the drainage area of the great valley of California.

Hokan, comprising certainly Shasta, Chimariko, and Pomo, probably Karok, and possibly Yana. The territory of this family is in the hill country to the north and west of the Penutian, and is more irregular.

Ritwan, comprising Yurok and Wiyot. No new proof on the previously suggested possible relationship of these two languages was obtained, except the negative evidence of complete lack of resemblances of both to any other family, which of course increases the weight of the similarities between the two, insufficient though these may yet be for absolute demonstration.

The number of distinct families in California is thus reduced from twenty-one certainly to fifteen and possibly to twelve.

Owing to the absence of one of the undersigned in Asia at the present moment, some time must elapse before our material and conclusions can be finally revised and published. For this reason the present announcement is issued.

R. B. DIXON
A. L. KROEBER

THE DEATH OF CHIEF JOHN A. GIBSON

"Another generation and there will be no custom; still another generation and there will be no memory."—*Chief John A. Gibson.*

JOHN A. GIBSON, head chief of the Seneca tribe residing at Grand River Reserve, Ontario, died November 1, 1912, from an apoplectic stroke, at the age of sixty-three. In his death the Iroquois tribes lose one of their last strongholds and ethnologists a well-nigh inexhaustible

storehouse of information on practically every side of Iroquois culture. As a young man Gibson was one of those wideawake, keen-witted Indians, so rare nowadays, who spend hours and days listening to the stories of the old men and who are not satisfied until they have traced a custom or a belief back to its earliest remembered antecedents. In this way he early acquired a good knowledge of the social structure, ceremonies, and mythology of his tribe and of its sister tribes in the League. He was a mighty lacrosse player and as manager of the Gibson lacrosse team was widely known in Canada and the eastern United States. At the age of thirty-one he lost his sight, the result of an accident in a lacrosse game. Prolonged medical attendance having failed to restore his vision, he resigned himself to his condition and, by dint of perseverance and his unusual powers of memory and comprehension, soon became one of the most respected among the wise men of the Iroquois. He was a prophet of the Handsome Lake doctrine, and in



CHIEF JOHN A. GIBSON

this capacity, accompanied by an attendant, usually his son, he made yearly visits to other Iroquois reserves, preaching the gospel of pure life and of adherence to ancient ideals.

At the same time, his house at Grand River Reserve became the Mecca of Iroquois students. Horatio Hale, David Boyle, M. R. Harrington, A. C. Parker, J. N. B. Hewitt, and a host of others drew a wealth of

ethnological information from the ever polite, somewhat formal, marvelously omniscient chief. Notwithstanding his blindness, Gibson repeatedly represented his people in their dealings with the Canadian government, not uncommonly with signal success, and he always prided himself on having personally met and shaken hands with a number of prominent Canadian officials.

The writer of these lines was fortunate enough to work with Gibson for several months in the course of the last year of his life. While his Iroquois researches will suffer greatly through this sudden cutting off of their main source of information, he also regards the death of the straight-mannered, noble-hearted, big-minded Indian chief with the sense of a keen personal loss.

A. A. GOLDENWEISER

ANTHROPOLOGIC MISCELLANEA

The Nineteenth International Congress of Americanists, 1914.—In the fall of 1911 a number of delegates to former sessions of the Congress of Americanists met in Washington, under the auspices of the Smithsonian Institution and the Anthropological Society of Washington, for the purpose of taking preliminary steps toward extending an invitation to the Congress at its London meeting in 1912 to hold its Nineteenth Session in 1914 at Washington. A temporary organizing committee was selected, consisting of Mr W. H. Holmes, chairman; Mr F. W. Hodge; and Dr A. Hrdlička, secretary. This committee entered into communication with the principal local institutions and organizations interested in the work of the Americanists, and by May 1, 1912, a formal invitation to the Congress was agreed on by the Smithsonian Institution, Anthropological Society of Washington, George Washington University, Georgetown University, Catholic University of America, and the Washington Society of the Archæological Institute of America. A list of persons to constitute the permanent Organizing Committee was agreed on and Dr Hrdlička was instructed to present the joint invitation, with the list mentioned, to the council of the London meeting of the Americanists. This was done, and both were accepted without objection. In addition an official invitation from the Bolivian government was accepted for a second session, to be held at La Paz following the Washington meeting.

On October 11, 1912, the permanent committee for the Washington session met in the National Museum for organization. Its membership is as follows:

Mr Franklin Adams, Dr Frank Baker, Mr Charles H. Butler, Prof. Mitchell Carroll, Rev. H. J. Shandelle, Rev. Charles W. Currier, Rev. A. J. Donlan, Dr J. Walter Fewkes, Miss Alice C. Fletcher, Mr Gilbert H. Grosvenor, Mr F. W. Hodge, Prof. H. L. Hodgkins, Mr William H. Holmes, Dr Walter Hough, Dr Aleš Hrdlička, Mr Gaillard Hunt, Prof. J. Franklin Jameson, Dr George M. Kober, Dr D. S. Lamb, Prof. Charles H. McCarthy, Mr James Mooney, Dr J. Dudley Morgan, Mr Clarence F. Norment, Mgr. Thomas J. Shahan, Mr George R. Stetson, Admiral Charles H. Stockton, Dr J. R. Swanton, Mr Harry Van Dyke, Dr Charles D. Walcott, and Mr M. I. Weller.

The election of officers resulted, in the main, as follows:

For Patron of the Congress: The President of the United States.

President of the Organizing Committee, Mr W. H. Holmes, head curator, department of anthropology, United States National Museum.

Secretary, Dr A. Hrdlička, curator, division of physical anthropology, United States National Museum.

Auxiliary secretaries: Rev. Dr Charles W. Currier; Mr Felix Neumann.

Treasurer, Mr C. F. Norment, president of the National Bank of Washington.

Head of the General (honorary) Committee: Dr Charles D. Walcott, secretary of the Smithsonian Institution; Committee on Finance: Dr George M. Kober; Committee on Arrangements and Entertainment: Prof. Mitchell Carroll, general secretary of the Archaeological Institute of America; Committee on Printing and Publication: Mr F. W. Hodge, ethnologist-in-charge of the Bureau of American Ethnology.

Through the courtesy of the authorities of the Smithsonian Institution the sessions of the Congress will be held in the new building of the National Museum. The exact date for the session will be determined later, in accordance with the wishes of a majority of the delegates to the Congress, but in all probability the month will be September. Active preparations for the session, which promises to be one of the most important ever held by the International Congress of Americanists, will be undertaken without delay.

A. HRDLIČKA

Prof. Frederick Starr, of the University of Chicago, has returned from West Africa. His trip was undertaken with special reference to Liberia, and with a secondary interest in Morocco. The party left Chicago on June 15, sailing from New York on June 20 for Rotterdam. While waiting in Holland for a steamer, from July 2 to July 13, he made some study of the Dutch literature regarding Malaysian riddles, a subject which has interested him since 1908, when he made a collection of Filipino riddles, which was later printed in a little book. He also investigated Dutch tobaccoists' rebuses, which he believes had an influence on the Japanese rebus in the seventeenth and eighteenth centuries. From Rotterdam the party went to Tangier, Morocco, where two weeks were spent, after which a coasting steamer was taken for Teneriffe, brief stops being made at the ports of Casablanca, Mazagan, Zaffi, and

Mogador. The moment was historic for Morocco—the old empire being in its death throes. The delay of a week at Teneriffe was utilized in a study of relics and literature relating to the Guanches, the aboriginal Canarians. Six days by sea took the travelers to their destination, Monrovia, Liberia. The next month, September, was given up to a trip into the interior, which Sir Harry Johnston says is the least known part of Africa. Though the heavy rains were on, a journey of about 150 miles on-foot was made through the Bassa country, up to the borders of the Mpesse district, the start being made from Grand Bassa. Interesting observations were made upon Bassa life and customs, and a fairly complete collection of Bassa objects, 350 pieces, was made. This collection is now at the Rauterstrauch-Joest ethnographic museum at Cologne, Germany. Returning to Monrovia, the month of October was spent there in an investigation of social, economic, and political conditions of the republic. Besides this investigation some side studies were made; measurements were taken upon 200 native soldiers of the frontier force; palmar and plantar impressions were made from 100 subjects; visits were made to Krutown and Veitown (native settlements on the edge of Monrovia) and to the neighboring native towns of Bellama and Sinko. Professor Starr found the conditions of Liberia so interesting that he proposes to publish a small book regarding its problems, which are serious and of great interest to Americans. Liberia is a legitimate field for American influence. Leaving Monrovia on October 26, stops of several days were made at Freetown, Sierra Leone, and Funchal, Madeira. Southampton was reached and left on November 16, and the arrival at New York was on November 26. Mr Campbell Marvin accompanied Professor Starr as photographer of the expedition. Besides ordinary photographs, some fourteen thousand feet of motion-picture film was exposed—about equally divided between Morocco, Liberia, and Sierra Leone.

The journey was cut short a month as Professor Starr received word at Monrovia of the death of Manuel Gonzales, who has in many expeditions accompanied him as photographer and assistant. Mr Gonzales desired to accompany the present expedition, but it seemed wise for him not to do so as he had suffered much in an earlier trip from African fever. He was shot as he slept in his bed in the City of Mexico on the night of July 8. Professor Starr now goes to Mexico to arrange the business affairs of his faithful and devoted helper. It is expected that he will return for the work of the winter quarter at the university, which begins on January 2.

Investigations at Tiahuanacu.—Under date of August 9th, Dr M. V. Ballivián, of the Dirección General de Estadística y Estudios Geográficos at La Paz, Bolivia, made the following announcement:

The last International Congresses of Americanists have occupied themselves with the prehistoric monuments of Tiahuanacu, which is likewise one of the main subjects coming within the scope of this Institution.

The Bolivian Government takes a most decided interest in the preservation of these interesting historical ruins, which are constantly visited and studied by travelers and men of science who come to this country.

Dr Manuel B. Mariaca, Minister of Public Instruction, in accordance with a suggestion which was made by my Office, has seen fit to aid, by means of ample pecuniary grants, the investigations which are being made, perhaps for the first time in a serious and methodical manner, on the site of the monuments remaining after the devastation caused by the removal of many archeological stones and a considerable number of monoliths of inestimable value during the construction of the railroad from Lake Titicaca to this city, to say nothing of the material extracted for the construction of buildings during the colonial period.

The excavations, which form the subject of the present communication, were commenced early last June under the direction of Dr Otto Buchtien, the distinguished director of the National Museum, on the site of the present cemetery. From the beginning of the work very satisfactory results have been obtained. At a depth of from one to three meters a large number of specimens of pottery dating before the time of the Incas have been found. Many of these specimens are in a perfect state of preservation, and consequently are of great value to the archeological collection of the Museum, which will be able to exhibit the most complete section of prehistoric ceramics of Tiahuanacu.

Attention is called to the vases discovered in large numbers and in a very good state of preservation; to the class of material, which is of the finest; to the artistic form, whether they be chalices or craters (*orditeres*) and also to the colors, which are very well preserved and similar to the very bright colors of the Pompeian frescos.

Another very noteworthy point in connection with these vases is the diversity of ideographic or pictographic signs, which deserve to be studied in detail by the specialists who are devoting their time to our American archeology.

Among the small objects there is one of great importance. It is a human figure of silver, about five centimeters high, which apparently shows the style of dress of those times and which, accordingly, is extremely interesting for ethnographic studies.

At a place less than one meter in depth an accumulation of burnt tiles was found. They were, however, in large pieces of a very peculiar design, such as has never been found at Tiahuanacu. The characters must be ideographic signs whose study might be very important.

Some skulls have also been collected. They are plainly deformed and are well preserved, though some are better than others.

Moreover, a number of wrought stones have been found which evidently served as weapons intended to be thrown, probably with slings.

Among the small objects there is one very noteworthy, carved in form of a stamp representing a fine drawing, which also belongs to the pottery of the time prior to the Incas.

In the most recent excavations a skull has been found which appears to belong to a rather ancient race. It is provided with a frontal suture, and all its dimensions are somewhat greater than those of skulls of the present inhabitants. It is deformed, the occipital being pressed upward very much. The zygomatic arches are very concave and the cheek bones very prominent. The orbits also appear to be larger than are now usually met with.

University of Pennsylvania Museum.—During recent months the Museum of the University of Pennsylvania has been very active in adding to its collections and in prosecuting scientific research. Among the more important accessions are: A South Pacific collection consisting of very rare and old ethnological pieces chiefly from New Zealand, Tonga, Samoa, and Fiji; a Chilkat Indian blanket; a large collection of ethnological material from the Congo, gathered by the well known explorers, Frobenius and Brandt; an ethnological and photographic collection from Sierra Leone; an ancient Egyptian oil portrait, a gift from Prof. W. M. Flinders-Petrie. The Museum continued its excavations in Crete, where, at Vrokastro, in the eastern end of the island, a late Minoan town and cemetery were opened by Mr Richard B. Seager and Dr Edith H. Hall. An account of this exploration appears in *The Museum Journal* for September. Mr Wilson D. Wallis spent the summer among the Micmac Indians of Nova Scotia making ethnological studies and gathering collections. Mr Louis Shotridge is engaged in making a model of his native village of Klukwan on Chilkat river, southeastern Alaska. Mr W. C. Orchard has finished a model representing an encampment of one of the Plains tribes, and it is proposed to continue with other models representing the encampments of other tribes. Owing to the extended preparations the Amazon expedition of the Museum was delayed in starting, but it is expected that the party, for whose use a one hundred and eighty-two ton boat has been purchased and remodeled, will reach the field of operations early in 1913. Dr W. C. Farabee has resigned from Harvard University and will take charge of this expedition. The Museum has also sent an expedition to the Philippine Islands, in charge of Mr Otto Hanson, for the purpose of making ethnological collections among the Bagobos of southern Mindanao.

The following weekly lecture course has been announced by the Museum for the current season:

November 23, DR EDITH H. HALL, Crete before the Days of Homer. November 30, MR LAWRENCE BINYON, What is Art? December 7, DR ARTHUR STODDARD COOLEY, Delphi and Olympia. December 14, DR MORRIS JASTROW, Impressions of the Orient: Cairo, Jerusalem, Damascus. December 21, MISS M. A. LAMB, The Needlework of Antiquity. January 4, DR CHARLES UPSON CLARK, Iberian Art: The Romans in Spain. January 11, MR RUSTOM RUSTOMJEE, The Cities and Temples of India. January 18, DR CHARLES UPSON CLARK, Moorish Art in Spain: The Alhambra. January 25, DR ROBERT PIERPONT BLAKE, Santa Sophia and Byzantine Art in Constantinople. February 1, MR JAMES H. BREWSTER, The Children of the Sun. February 8, MR E. TORDAY, In Pursuit of an African King. February 15, DR WALTON BROOKS MCDANIEL, Travels in Etruria. March 1, DR W. MAX MÜLLER, The Jewelry of the Ancient Egyptians. March 8, DR CARL BEZOLD, The Art of Ancient Egypt. March 15, DR WALTER BROOKS MCDANIEL, The Ancient Etruscans and their Works. March 22, MR FREDERICK MONSEN, My Friends the Indians. March 29, DR CLIFFORD H. MOORE, The Religion of Mithras.

Anthropology at the Dundee Meeting.—In the proceedings of Section H (Anthropology) at the Dundee meeting of the British Association for the Advancement of Science, according to the *London Times*, much interest attached to Professor Anthony's exhibit of the cast of the La Quina brain—one of the first examples of a brain of paleolithic man of Neanderthal type to be described and one of the finest yet discovered—as well as to Professor Keith's communication on the Gibraltar brain, which afforded strong corroborative evidence in support of the theories of the evolution of mammalian and especially the human brain elaborated in the president's address. Dr Duckworth's description of the jaw of paleolithic antiquity found in Kent's Cavern, Torquay, in 1867, but not previously described, which was presented to the section by Prof. Boyd Dawkins, was another interesting and important contribution to the study of the antiquity of man—a subject much in evidence at this meeting. Prof. Elliot Smith's views on the origin of megalithic monuments, which he associates closely with the beginnings of the use of copper in Egypt, whence he holds the adoption of this form of burial monument spread over the remainder of the world, gave rise to a discussion in which these views were strongly criticized and a number of profoundly interesting questions were raised. The discussion on the ethnological aspects of Scottish folklore, if it did not succeed in elucidating any particular

problems of Scottish ethnology, at any rate brought out the fact that many primitive customs still survive in different parts of the country and will undoubtedly serve to stimulate interest in a subject in which the serious workers are regrettably few. Papers dealing with Egyptian archeology and the ethnology of the Sudan were unusually numerous.

Prof. Elliot Smith in his two papers, one dealing with the earliest attempts at mummification in Egypt, and a second dealing with the physical character of the Egyptians of the second and third dynasties, has traced to a higher antiquity than had previously been done the use of this method for preserving the body of the dead, and in the second case has demonstrated the existence of an alien population in Egypt at an earlier date than his previous researches had revealed. Dr Wood-Jones's paper on the ancient and modern Nubas showed that there is evidence of this same process of infiltration of an alien element in Nubia in early Christian times. Mr Robert Mond's colored illustrations of the Theban tombs excavated by Mr Gardner were greatly appreciated, both on the ground of their beauty and of their scientific value as accurate records. The papers of Professor Petrie on early dynastic discoveries, and by Mr Quibell on tombs of the second and third dynasties, both contained important contributions to the study of Egyptian antiquities. To archeologists a melancholy interest attached to Mr Ogilvie's paper on the Temple of Philæ. The colored slides shown to illustrate the paper were reproductions of recent sketches, and probably will be the last records to be made of the temple, which will be finally submerged in November.

Researches for the San Diego Exposition.—Dr Aleš Hrdlička has returned from an extended and important trip through Europe, southern Siberia, and Mongolia, undertaken partly under the auspices of the Smithsonian Institution and partly in the interest of the Anthropological department of the Panama-California Exposition at San Diego. The objects of the journey were, first, an examination of all existing well authenticated skeletal remains of ancient man in Europe; second, the organization of several research projects concerning neolithic and early prehistoric man of Europe; third, a survey of conditions, in such parts of eastern Asia as could be covered in the available time, in regard to traces of Asiatic-American connections. The journey was successful in all these particulars. In regard to fossil man, Dr Hrdlička was able to examine all the recently discovered and as yet largely undescribed skeletal remains of early man in France, as well as to visit the deposits

from which the Mauer jaw was recovered and to restudy the precious originals of Krapina, the Spy, and Neanderthal caves, the Předměst (Maška) collection, the Brno (Brün) skulls, etc. With reference to neolithic and early prehistoric man, explorations were undertaken, with the cooperation of Professors Matiegka and Stolyhwo, in Bohemia and Ukraina, which yielded valuable results. Finally, as to the work in Siberia and Mongolia, it was found that the field is of the utmost importance to American archeology and anthropology. There are many thousands of unexplored mounds, some of them antedating the knowledge of metals, and there are scattered over vast areas living remnants of a people which evidently occupied much of these regions before the formation of the present large and composite Asiatic groups and which bore the strongest possible physical resemblance to the American "aborigines." The explorations in central Europe and in eastern Asia will, it is hoped, be continued. The results, scientific as well as objective, are to form one of the features of the anthropological exhibits at San Diego.

Other researches have just been completed for the anthropological department of the San Diego Exposition. One, in charge of Dr Philip Newton, had for its object the study of children and the gathering of collections among the Negritos of Luzon; the other, in charge of Dr Riley D. Moore, involved a visit to the Eskimo of St Lawrence island, Alaska.

Mr Vilhjálmur Stefánsson has recently returned from an expedition to the Eskimo of Coronation gulf, begun in 1908 under the auspices of the American Museum of Natural History. For practical reasons the original plans were changed to the extent of spending the first year with the Colville River Eskimo, but during the second summer Mr Stefánsson moved eastward, wintering near Cape Parry. In the spring of 1910 the expedition set out toward Coronation gulf and, after encountering various indications of a previous population, came upon a village of ten or twelve snow houses occupied by about thirty Eskimo. Thence the explorers proceeded east along the coast toward the mouth of the Coppermine, finding a number of inhabited villages on the way. From June until October they wandered back and forth between the Coppermine river and Great Bear lake with Eskimo summer hunting parties, crossing to Victoria island the following spring, and spending altogether thirteen months in the territory of this people.

The most striking result of the trip was the discovery that the Coronation Gulf Eskimo differ markedly in physique from their Alaskan and

Mackenzie river kinsmen. Several of the men had abundant sandy beards and more than half had eyebrows lighter than any seen among full-bloods in Alaska. About a dozen individuals in a population of a thousand had eyes lighter than the ordinary Eskimo brown, ranging to blue or blue-gray. In explanation of these traits Mr Stefánsson provisionally suggests that the Norse colony in Greenland may never have been entirely exterminated but that the larger portion of it may have escaped and intermarried with the Eskimo of their time. Another interesting fact is the discovery of pottery over a thousand miles east of Point Barrow and the occurrence of pottery at Point Barrow in the lowest strata harboring any human remains. Mr Stefánsson is of opinion that his data will shed light on the history of Eskimo movements and will establish more fully that they peopled Alaska from the east.

Archeological Explorations in Maine.—Mr Warren K. Moorehead, curator of the Department of Archeology, Phillips Academy, Andover, Mass., reports that the survey of which he has had charge finished its first year in Maine on September 8th. There were with the expedition at various times from eight to twelve men, and nearly all of the Penobscot valley was examined and mapped. A great deal of work was carried on at Pasadumkeag, 40 miles above Bangor, and at Lake Alamoosook, 5 miles south of Bucksport. At Pasadumkeag one undisturbed cemetery was entirely dug out; at Alamoosook two cemeteries and at Orland a fourth were found. In these four burial places were 170 graves, from which about 800 stone objects were recovered.

All the graves contained large quantities of red ocher—not small particles such as are often encountered in explorations in the West and South, but quarts, and in several instances more than a peck of the bright pigment. The objects found in the graves vary from one or two to nineteen in number, and comprise the true gouge, various modified forms of gouges, stone celts and hatchets (usually squared), and long, tapering and fluted gouges. There were also many unknown forms, particularly at Pasadumkeag, where long, oval stones occurred; these are perforated and often exceed a foot in length.

The absence of grooved axes, pottery, bone and shell objects, pipes, etc., indicates a culture different from that of the Algonquian tribes. Save in one instance no human bones were discovered, and the graves are so old that the stone objects themselves in many cases have commenced to disintegrate. Mr C. C. Willoughby, twenty years ago, opened three burial places in southern Maine and met with similar conditions; Pro-

fessor Putnam and Mr Willoughby considered these graves extremely old. The name "Red Paint People" has been tentatively applied to the unknown people to which the remains are attributable.

Mr Bryce on the Science of Man.—The following words are contained in an address delivered at the University of Sydney on July 4 last by Mr James Bryce, British Ambassador at Washington, as reported in *The Sydney Morning Herald*. The speaker was dealing with questions which are at present engaging the attention of university authorities throughout the British Empire and he evidently did not have anthropology definitely in mind, but what he says has a direct bearing on anthropology also and is of direct interest to anthropologists.

"How are the claims of theoretical science and applied science to be reconciled? How are the claims of languages, and geology, history, philosophy, and economics to be reconciled with the claims of physical science, and particularly the claims of applied science? At this moment science seems to have had all its own way. The development of scientific discovery has been such—so great and numerous have the applications of science to industry and commerce been, so far-reaching and potent in their results—that we have come to think of science as if it were the main object of human knowledge, and ought to take that primary place in the scheme of human education formerly taken by languages and philosophy. I shall not—it would be presumptuous on my part to attempt to do so—say anything to disparage the claims of science. It is essential, not only to industry and commerce and progress of every material kind, but also indispensable as part of education itself, opening up to us the whole dealings of nature and God's dealings with men through nature, which it is essential that an educated man should possess. But any scheme of education is narrow and imperfect which does not reserve an important place for the human subject. A knowledge of men, their nature and literature, their history, their institutions, social and political, and their economic life—a knowledge of men and everything about men is at least as vital and essential to us as a knowledge of nature."

The Congress of Religious Ethnology.—As all students are aware, a very large part of our knowledge of the ethnology and philology of primitive peoples, particularly of America, is due to the scholarly research and labor of priests of the Catholic missionary orders, Jesuit, Franciscan, Dominican, and others. So true is this, that it has been said, with pardonable exaggeration, that there is no savage tribe or

language of which one or the other has not written the first description or compiled the first dictionary.

Following the old tradition, an international organization of Catholic mission workers has recently been perfected at Louvain, Belgium, under the title of *Congrès d'Ethnologie Religieuse*, for the purpose of making scientific study of the religion, ritual, and general ethnology of primitive races, with special reference to the problem of Christianization and civilization. The initial meeting, August 27 to September 4, 1912, was brought about chiefly through the effort of Rev. P. W. Schmidt, S.V.D. (Society of the Divine Word), editor of the well known international anthropologic journal *Anthropos*, published under the auspices of his order at Salzburg, Austria. It was attended by about 120 delegates, representing a large number of missionary societies, besides lay professors and scholars. Among the lecturers were members of the Jesuit order; the White Fathers, the famous half-military order of the Sudan; the Society of the Divine Word, working particularly in China and the far east; the Pious Society of Missions; together with other distinguished churchmen, every one being a practical contributor in some department of ethnology. According to the official announcement, "The end is above all technical, the point of view strictly scientific, the tenor professedly Catholic." The proceedings will probably appear later in book form.

JAMES MOONEY

Death of F. J. Gillen.—In Australian papers which have just come to hand we regret to see the announcement of the death of Mr Francis James Gillen. Anthropology has thus lost a conscientious and devoted worker, whose world-wide reputation has been well earned in a fast-vanishing field of investigation, which, unfortunately, attracts far too few men of Mr Gillen's type. It is now forty-five years since he entered the public service of South Australia, and his official rank caused him to become virtually exiled to the heart of the Australian continent; but he devoted his spare time to the study of the aboriginal people among whom he lived, and it is no exaggeration to say that he acquired a much more intimate knowledge of the customs and beliefs of the most backward race of mankind now in existence than all other investigators had been able to collect; and this wealth of accurate information was put to the best use when Mr Gillen collaborated with Prof. Baldwin Spencer, F.R.S., of Melbourne, and produced a series of the most discussed volumes that have ever been contributed to ethnological literature. The opportunities for such investigations as Mr Gillen carried on are

abundant, but with the rapid intrusion of European customs into every quarter of the world they will soon be gone forever. It is thus with especial gratitude that all students of mankind will always regard the labors of such men as the late Mr Gillen, who have seized the opportunities presented by their daily occupations and rescued for posterity an accurate knowledge of the fast-vanishing customs and beliefs of primitive peoples.—*Nature*.

Conserving the Indians.—An article by Dr F. G. Speck in the June, 1912, number of *The Southern Workman*, entitled "Conservation for the Indians," is worthy of especial attention. The writer enters a vigorous plea for giving the Indian tribes the fullest opportunity and encouragement in preserving their tribal identity and their cultural status. This plea is made both from the standpoint of the anthropologist, who is eminently interested in the maintenance of culture for purposes of study and record, and much more from the standpoint of a sympathizer with those of other cultural groups which would thus be given the full right of self-development and self-assertion that civilized societies crave for themselves. The author also points out that this would enable them to avoid the misfortunes which our civilization has brought with it and will at the same time secure for them more respect from civilized people than can come from unsuccessfully aping the ways of so-called higher races.

Aurél Török.—The death is announced of Prof. Aurél Török, of Budapest, a prominent anthropologist and a corresponding member of the Anthropological Society of Washington. Professor Török, who had reached an advanced age, distinguished himself by numerous important contributions to anthropology, particularly by his studies of Aino crania and of anthropometry in general. In addition he brought together at Budapest a large and valuable skeletal collection. He died at Geneva, whither he had journeyed with the intention of attending the International Congress of Prehistoric Anthropology and Archeology.

A California Mission Pageant.—A pageant play, dramatizing the romantic story of the old Franciscan Indian missions of California, has been elaborated by the historian poet, John Stephen McGroarty, with the intention of annual spring performance in the theater of San Gabriel, California. "The Mission Play," as it is called, is in three acts, of period 1769, 1784, and 1847 respectively, the first dealing with the landing of Father Serra and his companions on San Diego bay, under the auspices of Don Gaspar de Portolá.

JAMES MOONEY

ON July 17 Miss L. Currlé presented a paper before the Royal Society of South Africa, at Cape Town, entitled "Notes on Namaqualand Bushmen." "The account," *Nature* says, "is taken from a gentleman whose early life afforded him ample facilities for obtaining a clear insight into the characteristics of Cape Colony Bushmen. Their wandering life is noted, also their mode of existence; the *k'mè*, by means of which they procure white ants; their dress and adornment. Nothing comes amiss to them, eating hyena, jackal, reptiles, and worms. Huts they never build, making only a frail shelter of grass and twigs. The poison they use for their arrows consists of snake poison, and also of that of the large spiders reputed to be very venomous, mixed with the milky juice of a *Euphorbia* growing in the Langebergen. They practice witchcraft to remove illness, this being done in a very simple manner by the old women. They acknowledge no chief or leader, and are not polygamous, but they have no marriage ceremonies. They are extremely revengeful, killing even their own relations if necessary. They believe in resurrection, and bury the dead in a sitting position, so as to enable them to get up easily and walk to a certain place where there is plenty of wild honey and locusts. Those who have been quarrelsome and have behaved badly toward their friends during their lifetime would get common flies to eat as a punishment. The Bushmen believe that jackals, wildcats, etc., were formerly human beings transformed by witchcraft as punishment for evil doing."

THE École d'Anthropologie de Paris announces the following courses for the year 1912-1913:

Anatomic Anthropology: Anatomic Characters of Fossil Man. Professor R. Anthony.

Prehistoric Anthropology: Art and Industry of the Magdalenians and the Neolithic Populations. Professor L. Capitan.

Zoölogic Anthropology: Appearance of Man in Europe—Hypotheses as to Anthropogenic Centers. Professor P. G. Mahoudeau.

Ethnology: Study of Mendelian Heredity—Facts, Laws, Anthropologic Applications. Professor G. Hervé.

Physiologic Anthropology: Intelligence in the Human Species According to Race, Sex, Age, Social Categories, and the Individual. Professor L. Manouvrier.

Comparative Ethnography: Origin and Evolution of Clothing and Ornament. Professor A. de Mortillet.

Sociology: The Social Maladies. Professor G. Papillault.

Anthropologic Geography: Geographic Relations in Prehistoric and Historic Times. Professor F. Schrader.

Ethnography: The French Colonies, Morocco, Central Africa. Professor S. Zaborowski.

Linguistics: History of Linguistics, The Higher Languages. Assistant Professor J. Vinson.

Series of special lectures by Dubreuil-Chambardel, Franchet, Kollmann, and Paul-Boncour.

MR F. H. STERNS, of the class of 1909, Oberlin College, has been employed by the Peabody Museum of Harvard University to explore an interesting class of prehistoric village sites in eastern Nebraska. A large portion of the archeological specimens collected by the exploration have been presented to the Geological Museum at Oberlin. Mr Sterns worked in Sarpy county, Nebraska, south of Omaha. The sites evidently belong to a very early stage of Indian occupancy and until Mr Sterns' researches were either unobserved or misinterpreted. They occupied circular depressions popularly supposed to be "buffalo wallows," and thought by Professor Barbour to be the original shape of the sites. It turned out, however, that the structures were square, and that the depressions had assumed their present shape from the deposition of silt, brought in by winds and storms. The collection, which is now being unpacked in the Oberlin Geological Museum, consists of flint and jasper scrapers, knives, arrowheads and the cores from which they had been broken, besides various forms of grooved and polished axes, together with a great variety of ornaments. Some of the arrow-shaft smoothers are made from pumice stone which Mr Sterns concludes has floated down the Missouri river from Montana. The collection constitutes one of the most valuable additions in recent years to Oberlin's already large and valuable archeological material.—*Science*.

MR NELS C. NELSON, assistant curator in anthropology at the American Museum of Natural History, New York, has returned from an archeological expedition to the Southwest. A systematic search for archeological sites was begun at Isleta del Sur, a few miles below El Paso, and completed northward to the latitude of Santa Fé. Within this section of the drainage 115 sites of more or less interest were located and about half of these were inspected. Actual excavations were conducted in two localities: first a group of seven large Tano pueblo ruins, situated on the border of the Galisteo basin, twenty-five miles south of Santa Fé, were worked to the extent of determining their age and culture relations; and later one entire Keresan pueblo ruin, situated in the Jemez National Forest, seven miles northwest of Cochiti, was cleared. Besides digging trial trenches and examining refuse heaps, four kivas and 573 ground-floor rooms were cleared. The débris removed from these rooms ranged in depth from two to twelve feet and with few exceptions consisted of

the remains of two and three story houses. The resulting collections comprise sixty more or less complete human skeletons and about two thousand artifacts.

AN interesting bibliographical discovery has lately been made in the Harvard College Library by Dr R. R. Schuller, lately connected with the Brazilian government in historical work. Dr Schuller found among the pamphlets relating to the languages of the South American Indians a fragment of a book in the dialect of the Millcayac Indians of Cuyo, in the Argentine Republic, printed at Lima in 1607, and written by the famous Chilean missionary, Padre Luis Valdivia, S.J. The book, though referred to by historians, has been unknown to bibliographers and has been considered lost forever. Some have regarded it as a bibliographical myth. It is the only book printed in the Millcayac dialect, which has long been extinct, and the two leaves found in the Harvard Library thus constitute the only source for a knowledge of the language. A critical bibliographical notice by Dr Schuller will be printed in the Papers of the Peabody Museum, and a further word by him on the subject will appear in the next issue of this journal.

IN his "*South America: Observations and Impressions*" (Macmillan, 1912), the Honorable James Bryce, in a book of eloquent pages, gives many interesting observations, from the point of view of a traveler and political philosopher, on the aborigines of South America. The volume contains little of purely ethnological interest, but a great deal that should interest and concern those who have to do with aboriginal peoples where contact with European civilization is inevitable, and the problem of race development and racial intermixture an ever-present one. From this point of view the chapter (XIII) on "The Relations of Races in South America" is of great value both for the description of conditions and for the interspersed political and social philosophy of one whose views must be considered as worthy of especial attention.

W. D. W.

MR RODMAN WANAMAKER has presented to the American Museum of Natural History the collection of photographs made on the Rodman Wanamaker historical expeditions for the study of the North American Indian in 1908-09. The opening of the exhibition of these pictures at the Museum on the evening of October 24 was made the occasion of a reception given by the president and trustees conjointly with the American Scenic and Historic Preservation Society. After the reception a lecture was given in the auditorium of the Museum by Dr Joseph K.

Dixon with colored slides and motion pictures illustrating the "Last Great Indian Council." The striking music accompanying the motion pictures was composed by Dr Irvin J. Morgan, who used the phonographic records made during the Wanamaker expeditions as his source of Indian rhythms and themes.

THE cornerstone of the new museum of the Ohio State Archeological and Historical Society, in Columbus, for the erection of which \$100,000 was appropriated by the Ohio legislature, was laid recently. The building, which stands at the entrance of the State University campus, will be two hundred feet long, fifty feet wide, and three stories high, and is planned to allow large additions in the future. The chosen purpose of the museum is the housing of the Society's unusual collection of archeological objects from the Ohio mounds, which is recognized as among the finest of its kind in existence. The legislature has also appropriated \$50,000 for the erection, in Fremont, Ohio, of a memorial to President Hayes, which will contain the Hayes Library of Americana, which is the famous Clark Library of Cincinnati with the additions made by Mr Hayes.

THE American Museum of Natural History has received from Mr D. C. Stapleton the gift of valuable prehistoric objects in gold and platinum from the province of Esmeraldas, Ecuador, and the headwaters of San Juan river, Colombia, and has placed the collection on exhibition in the South American gallery on the third floor. The objects show examples of casting and beating, of plating where copper has been covered with thin gold, of the union of two pieces of gold by welding, and of the soldering of two minute surfaces in such manner that it is difficult to detect the solder. The objects in platinum are of most interest, as it is not known that this metal was ever worked, except in this locality, by a prehistoric people.

THE Bernice Pauahi Bishop Museum of Polynesian Ethnology and Natural History has been enriched by the collection of the late Archibald S. Cleghorn, now known as "The Kaiulani Collection" in memory of the late Princess. This consists of 268 ethnological specimens, 80 framed portraits, 62 unframed photographs, and 360 books and pamphlets. Several smaller collections have also been added by gift and purchase, besides some loan collections. The curator, Mr Stokes, has continued researches on fish weirs and fish ponds, and made two attempts to study the petroglyphs covering a sandstone ledge 250 feet long by 30 feet wide at Keonelo beach on Kauai, occasionally uncovered by heavy southerly storms.

THE American Museum of Natural History has arranged a special course of lectures on anthropology for the Wednesday evenings from November 20 to December 18 inclusively. The opening lecture, on Man's Origin from the Biological and Anatomical Point of View, was given by President Henry Fairfield Osborn, who will be followed by Prof. George Grant MacCurdy on Evidences of Man's Origin, Development, and Culture in the Old World, and by Professor Livingston Farrand on The Physical Anthropology and Origin of the American Races. The closing lecture by Mr Nels C. Nelson will deal with General North American Archeology.

REV. J. OGLE WARFIELD, of the University of Pennsylvania, who for some time past has been interested in the Algonquian Indians of Virginia, visited this summer the remnant of the Nansemond near Portsmouth, the Chickahominy on the river of the same name, the Pamunkey on Pamunkey reservation, the Mattaponi on a small reservation on Mattaponi river, a detached branch of the latter near Adamstown, and a remnant of the Powhatan (?) in Essex county, about ten miles from the Rappahannock river. He would be glad to hear of any others who may be in existence today.

THE following grants have been made by the British Association for the Advancement of Science for anthropological research: Dr R. Munro Glastonbury Lake Village, £5; Sir C. H. Read, age of stone circles, £2; Prof. G. Elliot Smith, physical character of ancient Egyptians, £34; Prof. A. Thomson, anthropometric investigations in the British Isles, £5; Prof. W. Ridgeway, Roman sites in Britain, £15, and excavations in Macedonia, £30; E. S. Hartland, Hausa manuscripts, £20; Prof. J. J. Findlay, mental and physical factors, £20.

PROF. JORGE ENGERRAND, of the City of Mexico, has been designated Honorary Professor in the New University of Brussels; the Mexican Government has appointed him to the directorship for 1912-13 of the International School of Archeology and Ethnology, recently founded in the City of Mexico. In this latter capacity Professor Engerrand's work will deal largely with the antiquity of man in America, especially from the geological standpoint.

AT the recent meeting of the American Anthropological Association held in Cleveland, Ohio, the following officers were elected: *President*—Professor Roland B. Dixon, Harvard University. *Secretary*—Professor George Grant MacCurdy, Yale University. *Treasurer*—Mr B. T. B.

Hyde, New York. *Editor*—Mr F. W. Hodge, Bureau of American Ethnology. *Associate Editors*—Dr John R. Swanton and Dr Robert H. Lowie.

DR ALBERT ERNEST JENKS, professor of anthropology in the University of Minnesota, recently delivered a paper on "The Philippine Peoples" at the Mohonk Conference of Friends of the Indians and Other Dependent Peoples. January 28, 1913, he will deliver an address on the same subject in the American Museum of Natural History, and on February 1 another in Cooper Institute, New York City.

ETHNOLOGISTS familiar with the significant part played by the bison in the lives of the Indians of the central and eastern parts of this country will be interested to learn that, according to the fifth annual report of the American Bison Society, the number of bison in the United States and Canada known to exist has increased from 1,310 to 2,760 during the last four years.

THE following committee for the Peabody Museum has been appointed by the board of overseers of Harvard University for the year 1912-13: George D. Markham, Charles P. Bowditch, Augustus Hemenway, J. Walter Fewkes, Clarence J. Blake, Clarence B. Moore, Elliot C. Lee, Louis J. de Milhau, John C. Phillips, Thomas Barbour, Robert G. Fuller.

AT a joint meeting of the American Ethnological Society and the Section of Anthropology and Psychology of the New York Academy of Sciences, held at the American Museum of Natural History on the evening of October 28, an illustrated lecture was delivered by Prof. Franz Boas, the subject being "A Year in Mexico."

In October two clay figures, 26 and 30 inches long respectively and representing a bull and a cow bison, were discovered in the cavern of Tuc-d'Audoubert, commune of Montesquieu-Aventès (Ariège), France, by M. Bégouen and his son. These are said to be the first clay figures of Paleolithic age that have been found.

A CORRECTION.—Plate XXXIV in the *American Anthropologist* for July-September, 1912, was inadvertently inserted between pages 558 and 559, whereas it should have been inserted to face page 526. Subscribers should make the necessary change before binding the volume.

A GROTTA was discovered in Touraine, France, in January last, containing stone implements apparently belonging to the Moustérien period, although M. Dubreuil-Chambardei, who examined the place, believes that some of them are typical Acheulian forms.

IN THE *Victorian Naturalist* (vol. xxix., p. 43) Mr J. Mahony records the occurrence of remains of the Tasmanian devil (*Sarcophilus ursinus*) on the sandhills near Warrnambool, Victoria, in association with bones and teeth of man and other mammals.

MR ALANSON SKINNER, assistant curator in the department of anthropology of the American Museum of Natural History, has been elected honorary curator of anthropology of the Staten Island Association of Arts and Sciences.

THE Huxley memorial lecture of the Royal Anthropological Institute of Great Britain and Ireland was given on November 19, when Professor W. Gowland, F.R.S., delivered an address on "The Metals in Antiquity" and received the Huxley memorial medal.

PROFESSOR GEORGE GRANT MACCURDY of Yale University and Mr F. W. Hodge of the Bureau of American Ethnology have been elected corresponding members of the Société des Américanistes de Paris.

DR J. G. KNOWLTON has presented to the American Museum of Natural History, New York, some Eskimo skulls and other articles of ethnological interest from North Baffinland.

M. PIERRE V. MASSON of the publishing house of Masson et Cie, widely known as publishers of anthropological literature, has been made an officer of the Legion of Honor.

AN archeological section has recently been established at the Museum of Göttenburg, Sweden, of which G. Sarauw has been made curator.

A DISCOVERY is reported by the Académie Malgache of designs cut in stone in the grottoes of the province of Ambositra, Madagascar.

DR A. A. GOLDENWEISER has recently returned from a field trip to the Iroquois in the interest of the Geological Survey of Canada.

M. JACQUES HEIERLI, well known for his investigations and publications on the prehistory of Switzerland, died July 18, 1912.

AN expedition led by Mr and Mrs Scoresby Routledge is making a topographical and archeological survey of Easter island.

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